Manufacturers Record

Angeles Public Library
SCIENCE AND INDUSTRY
MAR 12 19
STACKS
REFERENCE
DO NOT LOAN

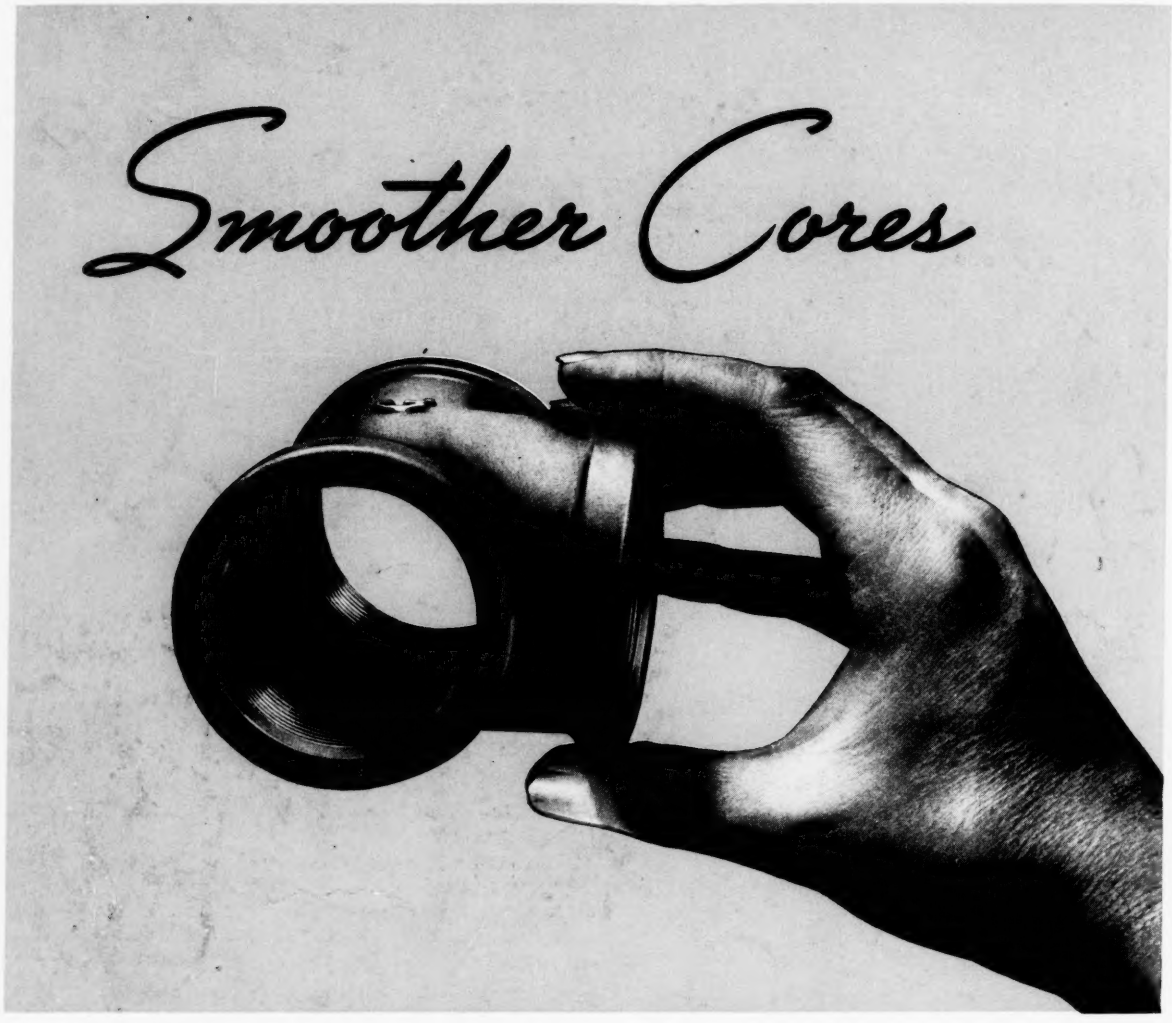
OKLAHOMA CITY, OKLAHOMA

SOUTHERN SKYLINES

Many cities of the South show by their impressive skylines the great progress this section is making. Tall buildings, wide boulevards, modern homes and hotels and churches are the evidence of invested wealth created largely from Southern resources which are so much nowadays in the public eye. This is so because the South is recognized as the scene and the opportunity for further industrial development.

IARCH 1940

Smoother Cores



. . . *in these* AIR-FURNACE MALLEABLE FITTINGS!

PLUS FEATURES OF GRINNELL FITTINGS

- Superior Metal
- Controlled Annealing
- Tested Strength
- Smooth Cores
- Uniform Wall Thickness
- Precision Threads
- Accurate Chamfer

IN all Grinnell Air-Furnace malleable fittings, you'll find unusually smooth interior surfaces that assure free-flow in piping installations. The reason? . . . *smoother cores!* For Grinnell cores combine especially fine materials with careful workmanship and inspection.

This is only one of seven superior features you obtain by specifying Grinnell malleable fittings. Available through branch offices, wholesalers and heating and plumbing contractors everywhere. Write for catalog, "Grinnell Pipe Fittings," listing Grinnell's complete line. Grinnell Co., Inc., Executive Offices, Providence, Rhode Island. Branch offices in principal cities.

CAST IRON . . . AIR FURNACE MALLEABLE IRON . . . STEEL . . . BRONZE FITTINGS BY **GRINNELL**

WHENEVER **PIPING** IS INVOLVED

Now, 9 Kroehler plants floored with HARD MAPLE!

. . . World's Largest Furniture Manufacturer

J. O. Taylor, Consulting Engineer, Kroehler Mfg. Co., says: *"Satisfaction with Hard Maple floors in the 8 other Kroehler Manufacturing Company plants influenced selection of* **MFMA** *Hard Maple flooring again in the new Dallas plant (No. 6) where 140,000 feet were used."*

A Floor that Gives Employers Better Workmen . . . and Workers Better Jobs

It's amazing in how many ways a floor affects efficiency. Here are just a few:

Warm, dry resilience underfoot postpones fatigue, stretches energy. Smoothness speeds up traffic with less effort. Good sanitation aids health, reduces lost time. Good light reflection makes for better "seeing." A "quiet" floor is easy on nerves, aids concentration. Cheerful appearance adds to workers' cheer as well.

All help keep a worker contented and make for better work. Each is part of every Hard Maple floor.

Kroehler, whose new Dallas daylight plant is shown above, believes that better working conditions make for better work and better profits.

With flooring, this policy involves no penalty. For Hard Maple is one of the longest-wearing of floors, is probably easiest of all to clean and maintain, and usually costs less per year of service.

That's why this flooring cuts costs, raises efficiency and keeps workers more content — **MFMA*** Northern Hard Maple, in strips or blocks. Consider it for *your* needs — ask your architect.

MAPLE FLOORING MANUFACTURERS ASSOCIATION
1797 McCormick Building, Chicago, Illinois

• • •

See our catalog data in Sweet's, Sec. 11/78. Write for photographic folder on Northern Hard Maple and leaflet on heavy-duty finishes for old or new floors.

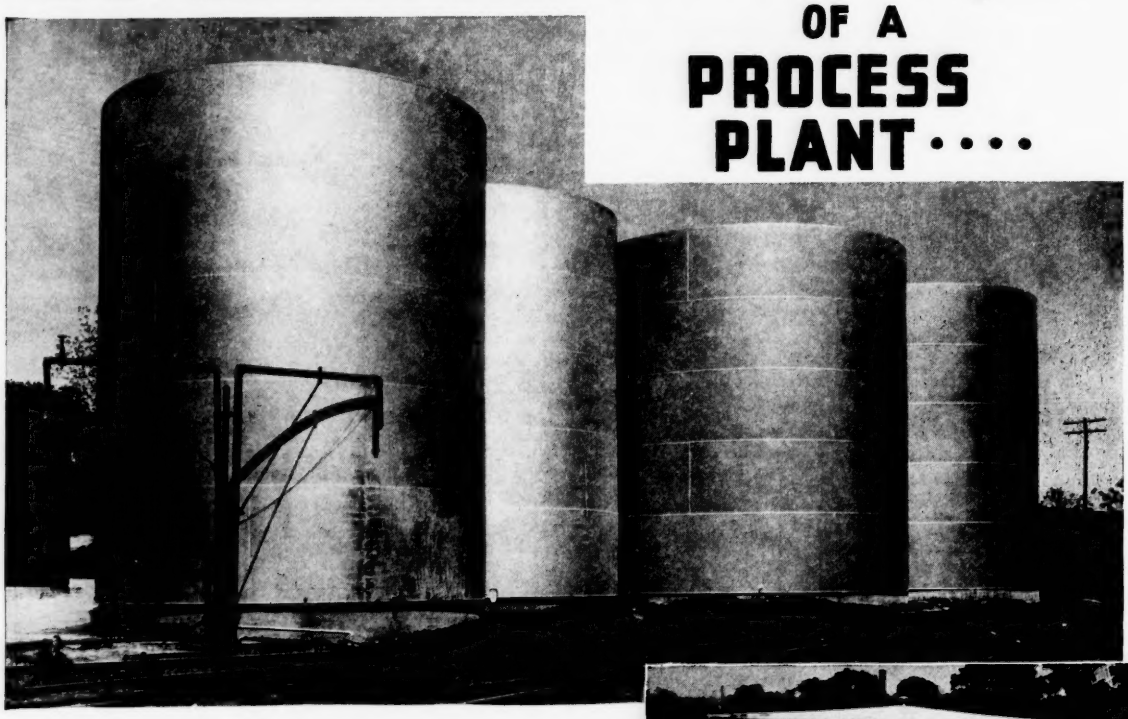
***** *The* **MFMA** *trademark, indented and stamped on Maple flooring, guarantees it to be* GENUINE *Northern Hard Maple, graded and* **MFMA** *supervised in accordance with the Association's exacting standards.*

Floor *with* **MFMA** Maple

REG. U. S. PAT. OFF

(NORTHERN HARD)

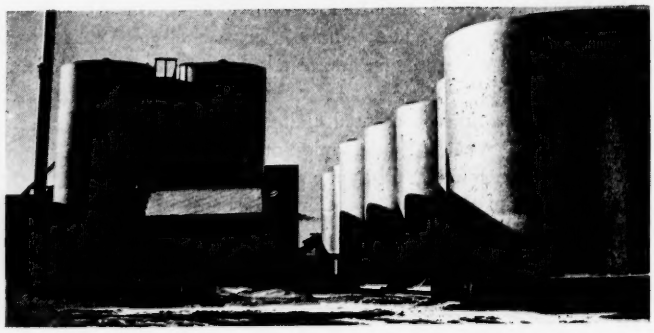
TANKS..the Floor Space OF A PROCESS PLANT....



When designating the capacity of a mechanical plant we usually refer to square feet or acres of floor space. In a plant utilizing a liquid process, your capacity often depends on the facilities you have for storing and handling liquids.

Do you have adequate tank capacity? If not, check with our nearest office. We can build elevated or flat-bottom storage tanks in standard or special designs—cylindrical, vertical, spherical or spheroidal structures for pressure—as well as most any other shape of heavy vessel you may require.

Top: Two 25 ft. diam. and two 30 ft. diam. welded tanks used by the Uniontown Cotton Oil Company at Uniontown, Ala. to store cottonseed oil. Center: A standard 10,000-bbl. oil tank of welded construction at the same plant. Right: Group of welded steel tanks at a lubricating oil plant. They are used for storing and handling various grades of lubricating oils. We also build steel bins, smokestacks and steel plate construction of all kinds.



CHICAGO BRIDGE & IRON COMPANY

Birmingham	1530 North Fiftieth Street	New York	3313-165 Broadway Bldg.	Philadelphia	1619-1700 Walnut Street Bldg.
Dallas	1408 Liberty Bank Bldg.	Cleveland	2216 Rockefeller Bldg.	Detroit	1510 Lafayette Bldg.
Houston	2919 Main Street	Chicago	2106 Old Colony Bldg.	Boston	1510 Consolidated Gas Bldg.
Tulsa	1611 Hunt Bldg.	San Francisco	1040 Rialto Bldg.	Havana	Edificio Abreu 402

B-714

Plants in BIRMINGHAM, CHICAGO and GREENVILLE, PA.

TABLE OF CONTENTS

MARCH, 1940

Volume 109, Number 3

EDITORIALS

Southern Skylines ..... Cover
The Problem of Unemployment 21
The Coming Road Program 22
Industrial Possibility 22
"Where the Old South Still Lives" 23
Creative Enterprise 23
Incorporated Bureaucracy 23

FEATURE ARTICLES

Incorporated Bureaucracy by Senator Harry F. Byrd 24
Wanted—A Business Pilot by John J. Wicker 26
$200,000,000.00 Invested in Southern Rayon Plants 27
United States Exports Continue High in January 31
The Permanence of Southern Pulp Mills by A. E. Wackerman 32
Federal Control in the Guise of Mine Safety by John D. Battle 34
Industrial Research 35
South's Contracts Up as Industrial Work Gains 36
New Industrial Plants and Expansions in the South During February 1940 38
Quieting the Nerves in the Sinews of Industry by F. L. Spangler 52

DEPARTMENTS

Letters and Comments 7
New Ways of Doing Things 40
Finance and Industry 44
Industrial News 48
Trade Literature 50
Index for Buyers 68
Index of Advertisers 70

Cover illustration of Oklahoma City by courtesy of the Oklahoma City Chamber of Commerce

MANUFACTURERS RECORD

Devoted to the Upbuilding of the Nation Through the Development of the South and Southwest as the Nation's Greatest Material Asset

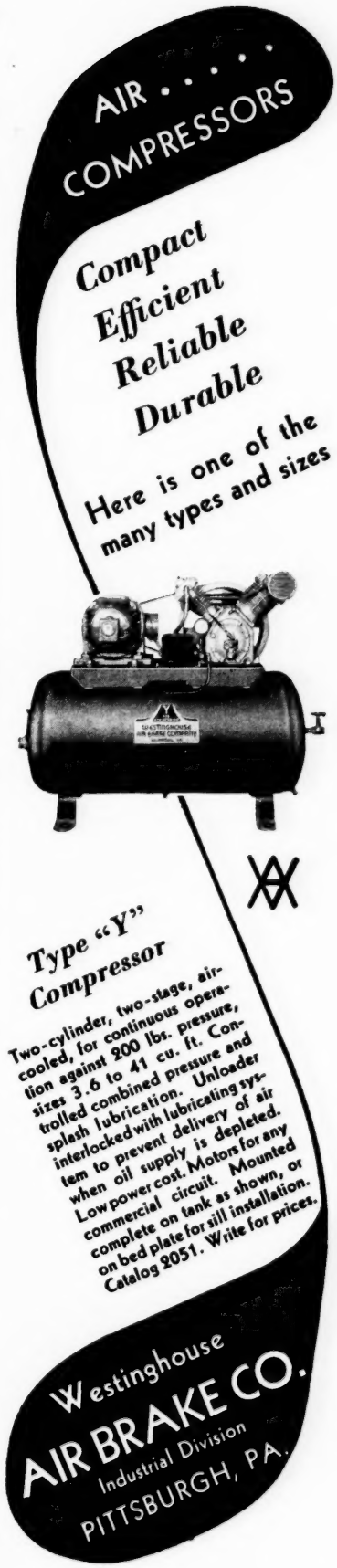
Published Monthly by the
MANUFACTURERS RECORD PUBLISHING CO.
FRANK GOULD, President

Main Office: Manufacturers Record Building, Commerce and Water Streets, Baltimore, Md. Phone: Plaza 7080-1.
Branch Offices: New York—11 W. 42nd St. Phone: Longacre 5-7180.
Chicago—28 East Jackson Blvd., Room 1510. Phone: Harrison 5867.
Cleveland, O.—850 Euclid Ave., Room 310. Phone: Cherry 4050.

Subscription Rates: One Year $2.00, Two Years $3.00. Single Copies 25c, back numbers over 3 months old 50c. Other Publications of the Manufacturers Record Publishing Co. Construction (daily and monthly issues) $10.00 a year. Construction (monthly issues only) $2.00 a year. Blue Book of Southern Progress (annual) $1.00 per copy.

Member A.B.C.

Entered as second class matter at the postoffice, Baltimore, Md., U.S.A., under act of March 3, 1879. Volume 109, Number 3 Monthly


AIR . . . . .
COMPRESSORS
Compact
Efficient
Reliable
Durable
Here is one of the many types and sizes
Type "Y" Compressor
Two-cylinder, two-stage, air-cooled, for continuous operation against 200 lbs. pressure, sizes 3.6 to 41 cu. ft. Controlled combined pressure and splash lubrication. Unloader interlocked with lubricating system to prevent delivery of air when oil supply is depleted. Low power cost. Motors for any commercial circuit. Mounted complete on tank as shown, or on bed plate for sill installation. Catalog 2051. Write for prices.
Westinghouse
AIR BRAKE CO.
Industrial Division
PITTSBURGH, PA.

"*The* SOUTH'S RESOURCES"

To be published this spring

GREAT THINGS are happening in the SOUTH and this volume will meet the demand for facts —

FACTS about the South's matchless natural resources.

FACTS about a frontier of industrial opportunity where giant plants are now locating.

This edition will contain seventeen three-color maps showing natural resources available for the commercial development of each Southern state.

As an invaluable reference work and an effective means of reaching 20,000 industrialists and financiers interested in Southern development, "THE SOUTH'S RESOURCES" offers an unusual opportunity.

A free copy of our sixteen page prospectus will be mailed to industrial executives upon request.

Single copies of SOUTH'S RESOURCES $1.00

Included in annual subscription to MANUFACTURERS RECORD at $2.00 a year.

MANUFACTURERS RECORD

BALTIMORE, MARYLAND

***Devoted to the upbuilding of the South and Southwest since* 1882.**

» » » LETTERS « « « AND COMMENTS

An Adequate Earning Base For Railroads

ATLANTIC COAST LINE RAILROAD COMPANY
Wilmington, N. C.

Editor, MANUFACTURERS RECORD:

In addition to an increased volume of tonnage which should result from a general business recovery, I believe it will be necessary to end the present practice of subsidizing other forms of transportation at public expense before the railroads again can attain their rightful place in the national economic scheme. I refer to those subsidies in the form of free-of-cost, free-of-tax, air fields; highways constructed from public funds, for the use of which the only charges made (fuel taxes and licenses) are far less than the rightful share of the beneficiary carriers; and free-of-cost artificial waterways, the maintenance of which is entirely at public expense and on which no taxes are paid.

In face of competition enjoying both direct and indirect subsidization, and comparative freedom from taxes, the railroads, which own and maintain their roadways and facilities and, like other property owners, are required to pay large taxes thereupon, are very greatly handicapped.

C. McD. DAVIS, Vice-President.

VIRGINIA CENTRAL RAILWAY
Richmond, Virginia

Editor, MANUFACTURERS RECORD:

There are of course numerous improvements which could be made in the railroad industry which would restore the railroads to an adequate earning basis, and I think that the most pressing need is for the competitors of the railroads to be put on a comparable taxing basis. I feel that this will take a long time to materialize.

E. O. N. WILLIAMS, Vice-President.

Advertising In 1888 and Advertising In 1940

WORTHINGTON PUMP AND MACHINERY CORPORATION
Harrison, N. J.

Editor, MANUFACTURERS RECORD:

I appreciate very much your letter of February 21st, in which you were good enough to bring to our attention an advertisement of Henry R. Worthington as it appeared in the November 10th, 1888, issue of MANUFACTURERS RECORD.

More than half a century has passed since that advertisement appeared and no period of our national existence has witnessed greater changes or more progress in so many different ways and one naturally wonders what the next similar period holds in store for our beloved country.

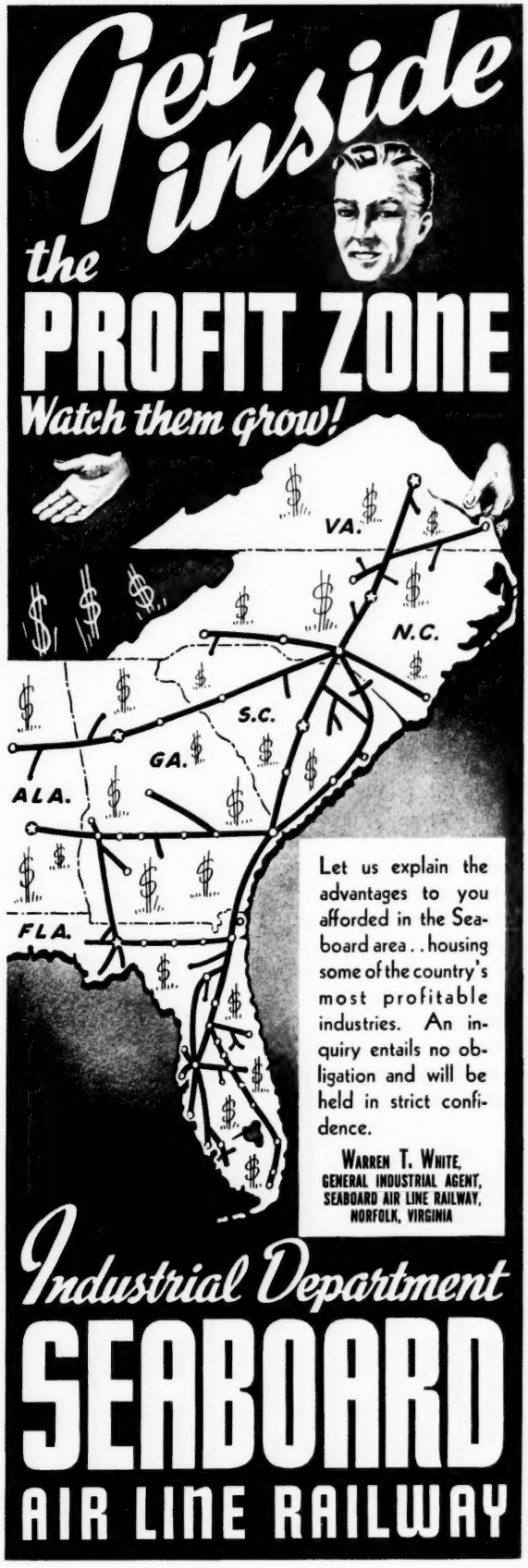
Personally, I believe, blessed as we are with abundant resources and stimulating climatic conditions and expanse of territories, that in the realm of research and science numerous further improvements for the enrichment of life still lie ahead.

I have little patience with the spirit of defeatism and any viewpoint that holds our frontiers have been reached or passed.

I have the further conviction that the widespread development of resources in the South and Southwestern territories of our country, as demonstrated by the extraordinary improvements and developments of the recent past, hold great future promise for further industrial expansion.

H. C. BEAVER, President.

(*Continued on page 9*)



Grandstand for Hollywood Jockey Club, Hallendale, Fla. 1247 tons of structural steel.

At the Races

When speed is essential on a construction job, steel and Virginia Bridge service finds a useful place. Compensation to the owner through earned income was the important factor on this job, which had to be completed in time for opening of the racing season. Forty-eight days after the order was placed with us the 1247 tons of fabricated steel was shipped complete. Unusual service, but Virginia Bridge facilities and personnel are always at command for adequate performance — not only for emergency but wherever an undertaking requires structural steel.

Virginia Bridge

STEEL STRUCTURES ALL KINDS

Virginia Bridge Company

Roanoke Birmingham Memphis New York Atlanta Dallas

"Letters and Comments"

(*Continued from page 7*)

Approval

ILLINOIS CENTRAL SYSTEM
Chicago, Ill.

Editor, MANUFACTURERS RECORD:

The splendid story which MANUFACTURERS RECORD had on the black-strap molasses decision is cordially appreciated, and I thank you for it. I also enjoyed reading James Farrell on "Changing Economic Boundaries." It is articles like this that have put your magazine on my list of required reading each month.

With best wishes,

J. L. BEVEN, President.

Widely Read

WASHINGTON UNIVERSITY
St. Louis, Mo.

Editor, MANUFACTURERS RECORD:

I have been surprised at the number of inquiries I have received as a result of the article, "Sirup from Sweet Potato Starch," published in the February MANUFACTURERS RECORD, especially since the work had previously received rather wide newspaper publicity.

LAWRENCE E. STOUT, Prof. of Chemical Engineering.

UNIVERSITY OF TAMPA
Tampa, Fla.

Editor, MANUFACTURERS RECORD:

Since the publication of the article, "Pulp Man's Paradise," in the January issue of your magazine and the attendant newspaper publicity, I have had some fifty requests for information and am still receiving others. It may interest you to know that requests have come from such widely divergent points as the Australian Trade Commissioner, Quebec, Berkeley, California, and Texas.

DONALD D. BODE' Professor of Chemistry.

THE CHAMBER OF COMMERCE
Augusta, Ga.

Editor, MANUFACTURERS RECORD:

The MANUFACTURERS RECORD is one of the most interesting publications coming to this office. I always read it carefully.

L. S. MOODY, Secretary.

Comments

The Greensboro (North Carolina) *Daily News* says editorially, "For the nation's No. 1 economic problem the South has done exceedingly well during the year now drawing to a close. *Construction* magazine is authority for the report that construction awards for 11 months of 1939 aggregated $859,190,000. *The Daily News* is especially encouraged by the widespread diversification reflected in the awards, as industrial contracts included developments in the region's aviation, food products, cement, gasoline, paper and rayon industries."

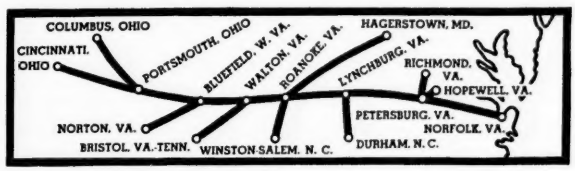
In an editorial, "It Is Paying," the *Winston-Salem Journal*, (North Carolina) notes, "The remarkable progress of North Carolina in the last two or three years in the building of new industries and the expansion of old." and quotes *The Wachovia*, official house organ of the Wachovia Bank and Trust Company, "'Evidently the state's expenditures for an advertising program and the maintenance of an industrial division and news bureau in connection with the Department of Conservation & Development are proving to be good investments.'"

According to the *Atlanta Constitution* of December 24, the Southern Governors' Conference has formulated "'A ten-year program for the economic and cultural enrichment of the South' to culminate in a 'Decade of Southern Progress' exposition in 1950'."

DEFEATING THE WEATHER

During this winter's blizzard — one of the worst in a decade — the trains continued to roll safely and efficiently every hour of the day and night, despite snow, sleet and sub-zero temperatures. While icy winds piled up mountainous drifts that paralyzed highway transportation, cargoes of food, fuel, and other vital supplies continued to move in a steady stream via the Norfolk and Western Railway's modern merchandise trains between the Midwest and the Virginias and Carolinas . . . between the North and South.

When you specify Precision Transportation — Norfolk and Western fast freight service — you can rest assured that your shipments to or from territory served by the N. & W. are promptly dispatched and carefully transported. Representatives of the railway's Freight Traffic Department are strategically located throughout the country. Call on them for information and assistance, or communicate direct with the Freight Traffic Department in Roanoke, Virginia.

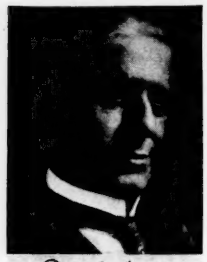


N&W RAILWAY
NORFOLK AND WESTERN Railway
PRECISION TRANSPORTATION

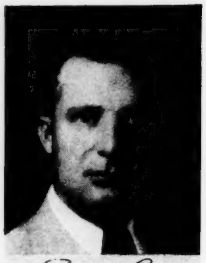
GOVERNOR OF GEORGIA
Chairman

PROSPERITY BALANCE

A 10-YEAR PROGRAM OF SOUND DEVELOPMENT OF THE SOUTH



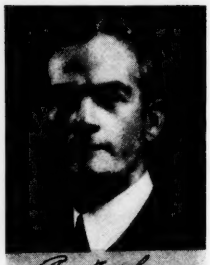
GOVERNOR OF NORTH CAROLINA



GOVERNOR OF LOUISIANA

GOVERNOR OF OKLAHOMA

GOVERNOR OF FLORIDA



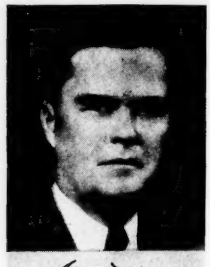
GOVERNOR OF MISSISSIPPI

GOVERNOR OF SOUTH CAROLINA

GOVERNOR OF TENNESSEE

GOVERNOR OF TEXAS

GOVERNOR OF ARKANSAS



GOVERNOR OF ALABAMA

WE, THE GOVERNORS...

Of the Southern States are convinced that our section, to enjoy its vast natural advantages for the location of industries, must have a balanced economy. Therefore, we have launched and are pushing vigorously a 10-year program of "prosperity balance," seeking to balance farms with factories, crops with livestock and economic gains with human welfare advancement.

With the removal of unfair freight rates by the Interstate Commerce Commission, the last artificial barrier to the South's industrial progress was lifted. Business leaders of the nation are urged to consider the South's advantages for location of their plants: a year-'round moderate climate, affording lower construction and production costs and assuring uninterrupted operations . . . Unlimited raw materials . . . Friendly and cooperative native-born labor . . . Excellent transportation facilities . . . Ports and shipping facilities strategically located to serve the rapidly growing trade with South and Central America.

Southern Governors Conference

Bona Allen Building, Atlanta, Georgia

LAWRENCE WOOD ROBERT, JR., Executive Director — **CARROLL DOWNES**, Industrial Consultant

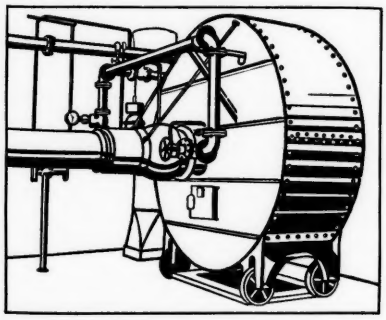
. . . to quick, convenient TRANSPORT *by land, sea and air*

● Seventeen deep-water ports on the Gulf Coast put the Gulf South shipper in touch with water-borne world traffic. Scores of railway systems interlace the Gulf South and connect with the rail carriers of North America. Thousands of miles of inland waterways (including the 360-mile Intracoastal Canal connecting coast ports with the Mississippi-Ohio river system) serve the territory. A great region-wide highway development plus superb air travel and express facilities complete the Gulf South transport picture.

In addition to transportation, Gulf South advantages include abundant Natural Gas, the No. 1 industrial fuel—swiftly growing markets—plenty of available power—native, white, reliable, intelligent labor—good schools—plentiful land—a delightful climate.

Industry is decentralizing southward to a friendlier atmosphere. Move to the Gulf South where you are wanted and appreciated by your neighbors.

Without obligation, let us make a confidential survey for you to meet the requirements of your industry



● Here is a gas burner as applied to a rotary cement kiln in operation in a modern Gulf South industrial plant. Equipment of this type is fired efficiently and economically down here by Natural Gas.

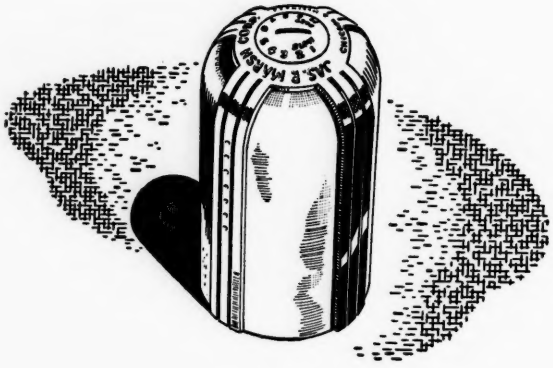
For information on GULF SOUTH opportunities write to
SUPERVISOR OF INDUSTRIAL DEVELOPMENT

UNITED GAS
PIPE LINE COMPANY

FOR TEXAS, *Mail received at:* Beaumont, Beeville, Dallas, Fort Worth, Houston, Longview, San Antonio and Wichita Falls. **FOR LOUISIANA,** *Mail received at:* Baton Rouge, Lake Charles, Monroe and Shreveport. **FOR MISSISSIPPI, FLORIDA and ALABAMA,** *Mail received at:* Jackson, Mississippi.

ALL INQUIRIES CONSIDERED CONFIDENTIAL

COPR.. 1940. UNITED GAS PIPE LINE CO.



THE SECRET OF THE SLUG THAT WAS SLUGGED

This handsome relief-valve housing was once just a flat, round slug of aluminum.

We put it into a special machine and slugged it . . . just once, quick and hard, socko!

Result: one valve housing, complete with lettering, decorative ridges, and all.

Further result: our customer got a housing beautifully made, in an Alloy of Alcoa Aluminum that resists steam corrosion, and at a cost that he liked, very much.

Impact extrusion is what engineers call the process, and it works minor miracles with costs of basically symmetrical pieces, such as the one illustrated.

It works with many different Alloys of Alcoa Aluminum, with their wide range of physical characteristics, as the need may be.

Shows what a wealth of possibilities you open up for yourself when you decide to find out whether a part can't be made better in Alcoa Aluminum.

One thing sure, you'll never know 'til you try.

This is, indeed, an invitation. Aluminum Company of America, 2109 Gulf Bldg., Pittsburgh, Pa.

Reg U S Pat Off
ALCOA ALUMINUM

ALCOA · ALUMINUM

Helping to keep the Cost of Living DOWN!

THE cost of living is higher today than it was eight years ago, in 1932. It is difficult to see where any general reduction can take place in the near future. For one thing, there is the effect of the tremendous increase in national debt which we have not yet fully felt.

In June 1932, our Government's gross debt totaled about 19½ billion dollars; it spent about 4½ billion dollars that year.

In 1940 the figures show over 43 billion dollars of direct debt with over 9½ billion dollars being spent this year.

It is now costing over 1 billion dollars yearly to pay the interest on the national debt alone.

❦ ❦ ❦

Not everything, of course, has been rising in price.

In the face of rising taxes and material costs, and with substantial wage increases, some American industries have actually succeeded in continuing to lower prices.

Among these, the electric power industry stands out prominently. It has been steadily and substantially reducing rates for electric service for American homes and American industries, both large and small.

In respect to reduction in prices, the electric utility industry has a record unparalleled by any other industry, the product of which enters into the cost of living.

❦ ❦ ❦

In 1932, the average home in the United States was using only 601 kilowatt hours of electricity annually. It is now using 900 kilowatt hours a year.

Eight years ago, this home paid an average of 5.60c per kilowatt hour for electric service. Today it pays only 4.07c per kilowatt hour . . . a reduction of 27%.

In this country, the average cost of electric service in homes served by utility companies is lower than the average cost of service in communities which depend upon municipally-owned plants.

Here it is well to remember, again, that utility companies pay high taxes . . . Federal, State and local.

❦ ❦ ❦

In the Commonwealth & Southern System, residential electric rates have steadily decreased since 1932 and the use of electricity in the home has steadily increased.

Eight years ago, the average household was buying from us only 675 kilowatt hours yearly and was paying an average rate of 5.12c per kilowatt hour.

Commonwealth & Southern System's

RATES to home users of electricity average 24% LESS than the national average, (C.&S., 3.09c; national, 4.07c—per kilowatt hour).

USE of electricity in the home averages 33% MORE than the national average. (C.&S., 1196; national, 900 —kilowatt hours).

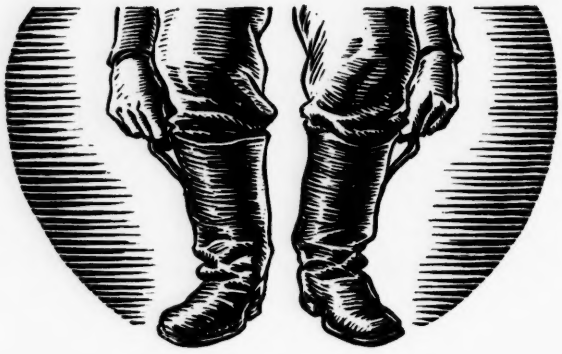
Today we are serving the average family with more than 1196 kilowatt hours per annum . . . 33% more electricity than is being used in the average American home. And, this family pays us an average of only 3.09c per kilowatt hour . . . exactly 24% less than the average rate paid by all American families.

❦ ❦ ❦

The American people can count upon electric service remaining among the items which will not overtax their family budget . . . as long as fairly regulated utility companies provide the service and are, themselves, not over burdened with taxes.

Wendell L. Willkie, PRESIDENT

The Commonwealth & Southern Corporation



WE LIFT OURSELVES BY OUR OWN BOOTSTRAPS!

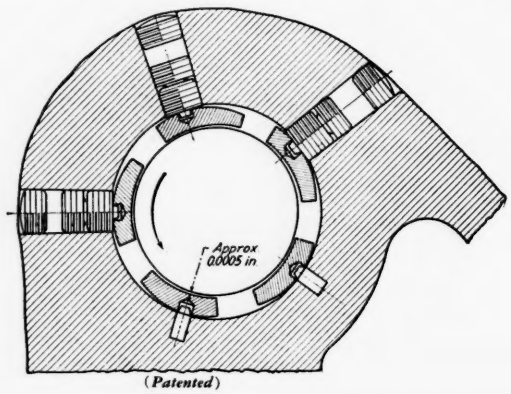
IT shouldn't be news when wheels by Carborundum do a good grinding job. But it *is* news when Carborundum-made wheels grind something that helps Carborundum-made wheels do a better grinding job!

Sounds like "wheels within wheels". But it's exactly what's happening with the new "Filmatic" spindle bearing developed by Cincinnati Grinders Incorporated. This revolutionary new multiple-shoe spindle bearing, ground and finished with Carborundum-made wheels, is enabling Carborundum-made wheels to give a smoother grind than ever.

Wedge-shaped oil films lock the spindle in its central position with five "fluid vise jaws". The spindle is perfectly free to rotate, but is rigidly and accurately supported at all times. Flutter and waver are eliminated, quality of grinding vastly improved.

We are doubly proud of this story. Proud that wheels by Carborundum are used to help make "Filmatic" bearings. Proud that many Cincinnati Grinding Machines are equipped with Carborundum-made wheels. Doesn't this indicate that wheels by Carborundum ought to be at work on many jobs in *your* plant too?

CARBORUNDUM
ABRASIVE PRODUCTS



(*Patented*)

In the "Filmatic" bearing, developed by Cincinnati Grinders Incorporated, three or more separate self-adjusting shoe members are used to produce independent converging oil films which develop high radial pressures, forcing the spindle into a central position.

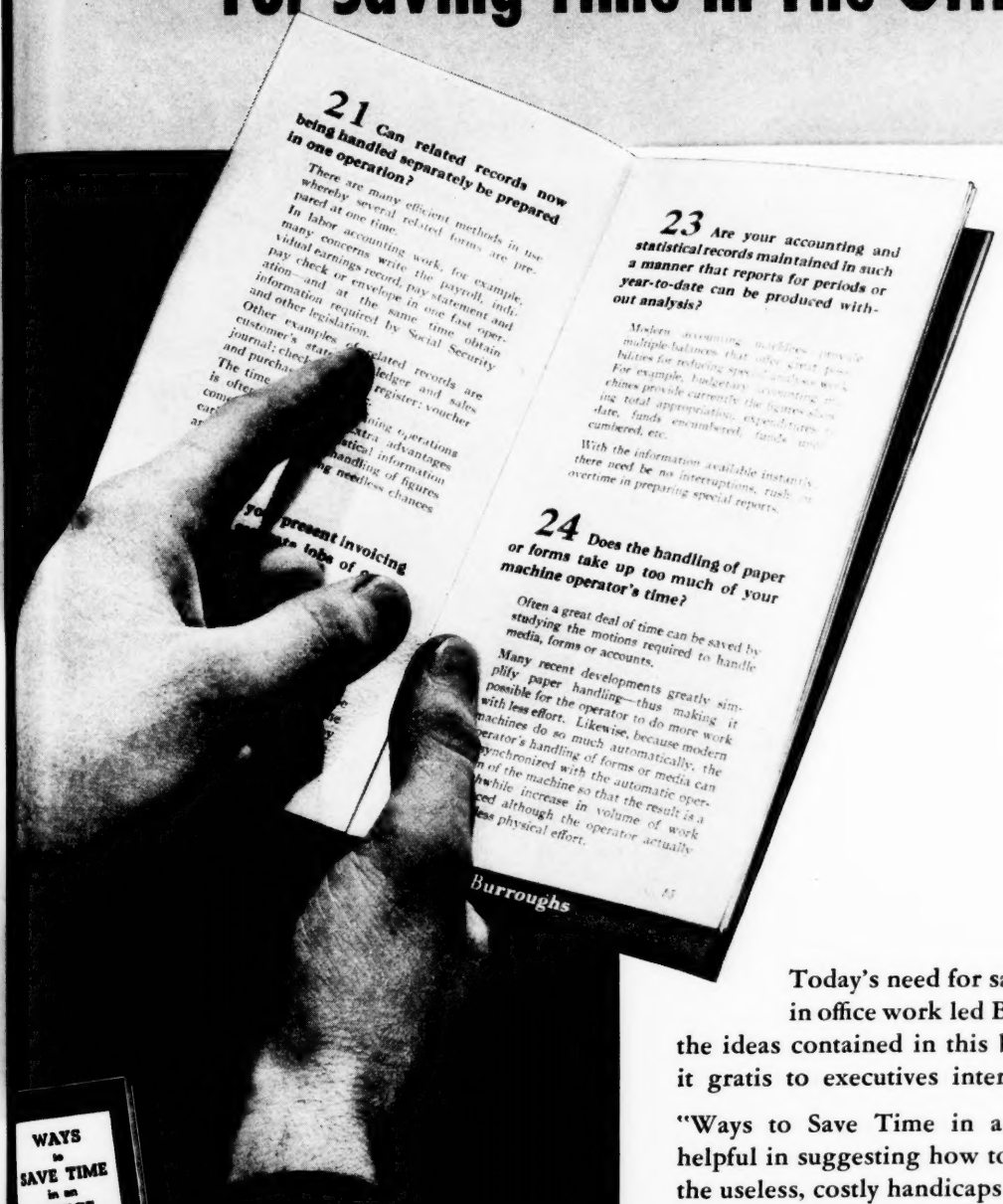
In the arrangement shown, the spindle is locked in its central position by five "fluid vise jaws" which still permit perfect freedom of rotation with a coefficient of friction almost identical with that of anti-friction bearings. Because of the high preload, and also because of the ability of the shoes to adjust their wedge angle to accommodate the load, the movement of the spindle under a change in load is only a minute fraction of that which occurs in other types of bearings.

THE CARBORUNDUM COMPANY, NIAGARA FALLS, N. Y.
REG. U. S. PAT. OFF.

Sales Offices and Warehouses in New York, Chicago, Philadelphia, Detroit, Cleveland, Boston, Pittsburgh, Cincinnati, Grand Rapids

(Carborundum is a registered trade-mark of The Carborundum Company)

This Booklet Offers Many Practical Ideas For Saving Time In The Office


21 Can related records now being handled separately be prepared in one operation?
23 Are your accounting and statistical records maintained in such a manner that reports for periods or year-to-date can be produced without analysis?
24 Does the handling of paper or forms take up too much of your machine operator's time?
Burroughs

WAYS to SAVE TIME in an OFFICE
Suggestions for locating and eliminating the useless, costly operations that handicap office employees

SEND FOR YOUR FREE COPY TODAY!

Ways to Save Time in an Office" names definite jobs which both time and money might be saved by actical analysis. For your copy, telephone the local rroughs office; or, if you prefer, write direct on your n letterhead to Burroughs at Detroit, Michigan.

Today's need for saving time and money in office work led Burroughs to assemble the ideas contained in this booklet—and to offer it gratis to executives interested in the subject.

"Ways to Save Time in an Office" proved so helpful in suggesting how to locate and eliminate the useless, costly handicaps that slow up work in the office, that it has already been reprinted four times. Executives the country over have not only told us how much they have profited by the information it contains, but a great many have asked for extra copies for their associates.

BURROUGHS ADDING MACHINE COMPANY
6159 SECOND BOULEVARD, DETROIT, MICHIGAN

Burroughs

THE CASE OF THE GROWING CINDER PILE

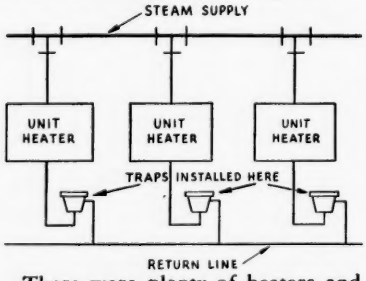
SOLVED WITH PREVENTIVE MAINTENANCE

"You'd think we were heating the whole outdoors," growled the BOSS, ". . . the way we burn coal around here."

"One of these days those boilers will bust," said the ENGINEER. "We've got to keep them at top speed all the time."

"Sounds like trouble," offered the CRANE REPRESENTATIVE, ". . . that Preventive Maintenance and the right Crane equipment should remedy."

AN OLD manufacturing plant was vacant for years. Then a machine tool company moved in. The building suited the tool builder well, but the cost of heating it was excessive. Two 125 h. p. boilers were used for heating—hooked up with a system of unit heaters. The boilers seemed to be bottomless as the coal pile vanished and the cinder pile grew higher.



There were plenty of heaters and they were big enough. Steam supply was adequate. Ordinary maintenance proved futile. It failed to disclose that the system was improperly drained—that condensate made it impossible for steam to get through the heaters. All heater outlets were piped to a common return.

Here's where Preventive Maintenance entered the picture. The Engineer was desperate. He called in J. M., the Crane Man. They found an accumulation of condensate in some of the heaters. And, as Preventive Maintenance counseled, for positive correction, they installed Crane inverted open float Steam Traps of the proper capacity on each of the unit heaters. See the sketch at left.

Results: (1) The problem was permanently solved. (2) Next winter coal consumption was cut from 13 to 8 cars, with a saving of almost double the cost of the Preventive Maintenance applied. (3) Another manufacturer has learned the sound economy of Preventive Maintenance, and of looking to the great Crane line for the right equipment for every flow control need; also, the wisdom of consulting the Crane Representative on every piping problem.

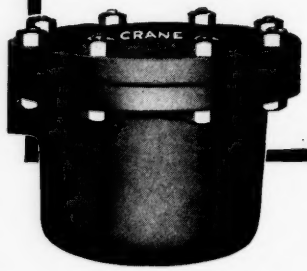
**This case is based on an actual experience of a Crane Representative in our Cincinnati Branch.*

CRANE STEAM TRAPS KEEP STEAM LINES HOT AND DRY

You are not getting the maximum heat and power from steam if your lines are not properly drained. You are straining the piping, shortening the life of valves, exposing steam operated equipment to serious damage when condensate is not removed.

In steam lines up to 600 pounds pressure, the wasteful and damaging effects of condensate are completely eliminated with Crane Inverted Open Float Steam Traps. These sturdy, simple, and low-cost traps will pay for themselves many times over. Once installed they require minimum attention—yet, automatically, stop steam waste, step up efficiency.

For pressures up to 200 pounds, the Crane line of No. 981 traps will give maximum protection against condensate troubles.



1940 OUR 85th YEAR

CRANE

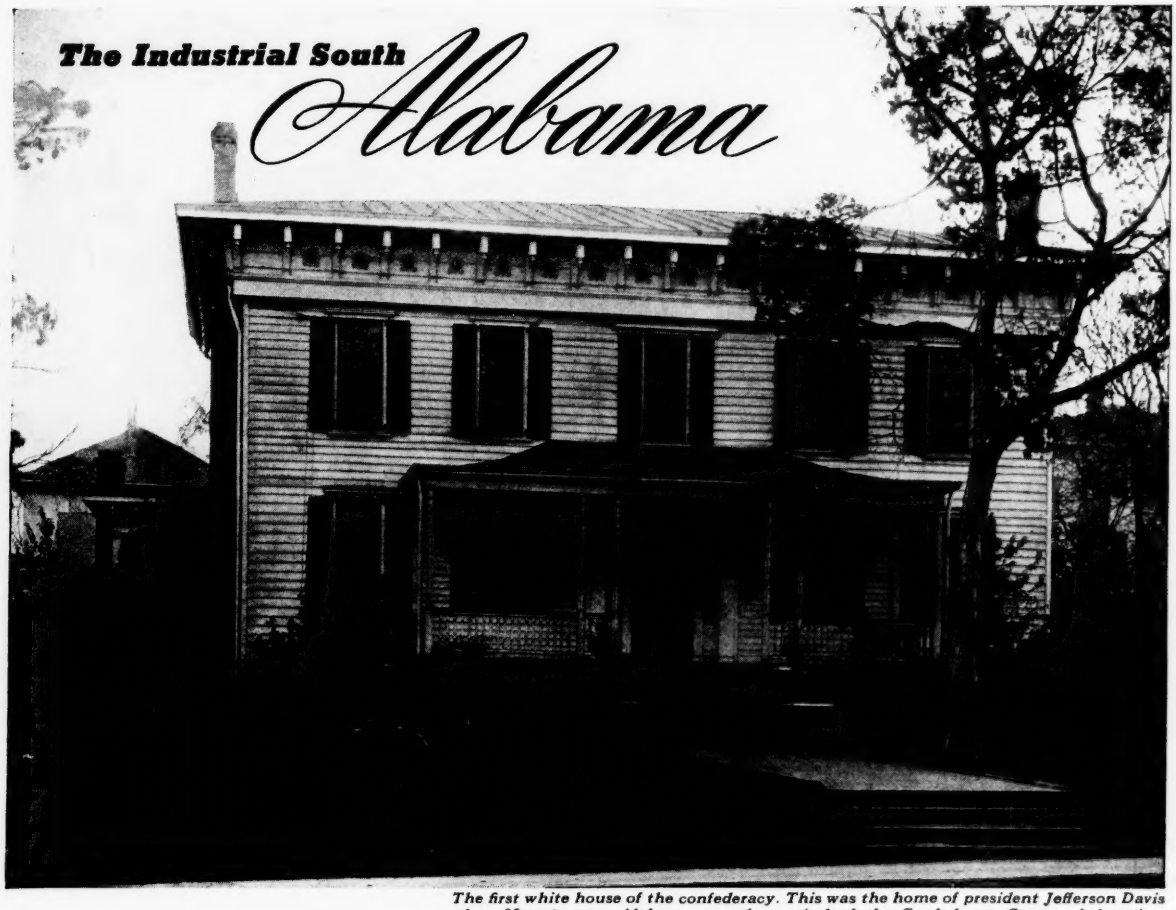
CRANE CO., GENERAL OFFICES
836 S. MICHIGAN AVE., CHICAGO

VALVES • FITTINGS • PIPE
PLUMBING • HEATING • PUMPS

NATION-WIDE SERVICE THROUGH BRANCHES AND WHOLESALERS IN ALL MARKETS

The Industrial South

Alabama



The first white house of the confederacy. This was the home of president Jefferson Davis when Montgomery, Alabama was the capital of the Confederate States of America.

Alabama has been singularly successful in allying the traditional color and charm of the Old South with the progressive spirit of modern agricultural and industrial activity.

Lying in the heart of the cotton belt, Alabama raises about one-fifteenth of the U. S. cotton crop. In addition, she produces an important share of the nation's corn, potato, peanut, sugar cane and fruit crops.

Underlying her fertile soil are some 8,000 square miles of actively mined coal beds. Gold, silver, copper, lead, iron ore and other minerals are among Alabama's natural resources.

Here, modern factories and plants turn out nitrates, clay, iron and cotton products that go to world markets.

All of these great projects whether industrial or agricultural need steel and steel products for proper maintenance and growth. Bethlehem, through its tidewater plant at Sparrows Point, Maryland, is well-equipped and well situated to furnish these steel materials to the entire industrial South.

Did you know?

That—The first white man to visit the State of Alabama was Hernando de Soto in 1539.

That—In some sections of Alabama 3 to 4 crops a year can be raised on the same land.

That—America's first Mardi Gras was staged in Mobile, Alabama in 1830.

That—The first colonial enterprise ever to be attempted on the Gulf of Mexico was on Dauphin Island just off the coast of Alabama.

That—Mobile has been under the French, British, Spanish, Republic of Alabama, Confederate and U. S. Flags.

BETHLEHEM STEEL

BETHLEHEM STEEL COMPANY

Recent Intense Cold Costs South Millions In Highway Damages
From Virginia To Florida And Texas Crews Seek To Repair Heavy Toll
ATLANTA—(AP)—The South faced a multi-million dollar bill today fo repairs to highways not built withstand intense cold.
From Virginia to Florida and to Texas crews are busy repai damage caused by the Janu freeze, the worst in some sec since modern highways were structed.
Heavily traveled North-S arteries are receiving
Road Damage Estimated at Over Million
Freezing Weather Causes Florida Highways to Break and Ridge.
TALLAHASSEE, Feb. 2, (AP) — January's freezing weather, which produced unprecedented ground ice, caused 000,000 damage
State Road reported about
NEWLY BUILT STATE ROADS NEED REPAIR
heap' Highways Break Up After Brief Use in rious Rural Areas.
costly
Let it RAIN!
Let it FREEZE!

CONCRETE'S SUPERIOR WEATHER RESISTANCE WORTH MILLIONS TO SOUTHERN TAXPAYERS THIS SPRING

Once more headlines like these, following the recent heavy freeze, broke the bad news to Southern taxpayers.

But there's another side to the story. Concrete resisted the damaging effects of heavy rains and severe cold—*saved* millions.

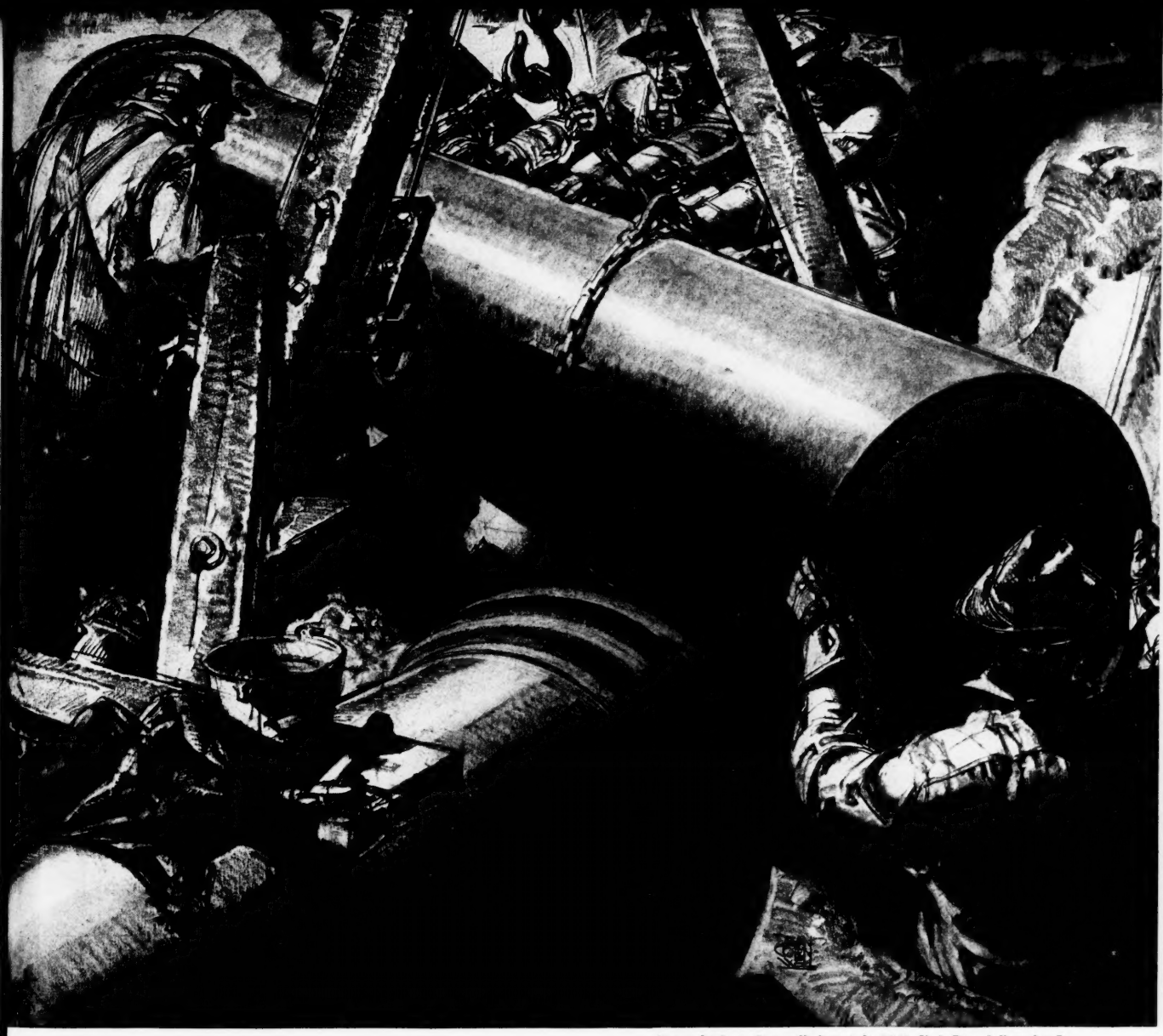
Concrete has the "bridging strength" needed to spread loads and so keep the pressures on weakened subgrades within safe limits.

Because of this simple engineering fact, your concrete roads remain safe and efficient in all weather—need no "load limit" or "detour" signs—are kept in prime condition without expensive maintenance.

Concrete is a true "low-cost road" over a period of years.

PORTLAND CEMENT ASSOCIATION, Dept. 3-21, 33 W. Grand Ave., Chicago, Ill.

A national organization to improve and extend the uses of concrete . . . through scientific research and engineering field work



Drawn by Dean Cornwell. Copyright 1940, U. S. Pipe & Foundry Co.

NEARLY everybody knows that cast iron underground mains give the best service for the longest period of time. "Best" service means trouble-free service. Long life, in the case of cast iron pipe, means a *century or more.* The result is lowest cost per service year. We manufacture Super-de Lavaud chill-free, centrifugally cast pipe and U. S. pit cast pipe. We have on hand for immediate delivery large stocks of pipe and standard fittings in plant and storage yards throughout the country.

U.S. cast iron PIPE

Centrifugally or Pit Cast for water works, gas, sewerage, drainage and industrial services.

U. S. PIPE AND FOUNDRY CO. General Offices: Burlington, N. J.

Plants and Sales Offices Throughout the U. S. A.

XUM

Fig. 2129
Single Wedge Disc
Non-rising Stem

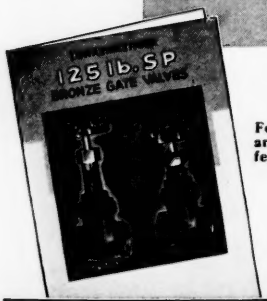
Fig. 2125
Double Wedge Disc
Rising Stem

LUNKENHEIMER
125 lb. S.P.
BRONZE GATE VALVES

These two valves offer more economical and satisfactory service on the numerous low-pressure applications around industrial plants.

Their advanced design provides unusual strength and ruggedness -- machining is to close tolerances -- materials exceed accepted standards. We invite direct comparison with any 125 lb. S.P. bronze gate valve you may now be using.

On your next order for 125 lb. S.P. bronze gate valves, specify Fig. 2125 for the Double Wedge Disc, Rising Stem type or Fig. 2129 for the Single Wedge Disc, Non-rising Stem type. You will profit from the excellent service you will get from these fine valves.



For detailed design and construction features write for circular 544.

ESTABLISHED 1862
THE LUNKENHEIMER CO.
"QUALITY"
CINCINNATI, OHIO, U. S. A.
NEW YORK CHICAGO
BOSTON PHILADELPHIA
EXPORT DEPT. 318-322 HUDSON ST., NEW YORK

CARRIED IN STOCK BY LUNKENHEIMER DISTRIBUTORS

11012-48-62

THE PROBLEM OF UNEMPLOYMENT

The Savannah News speaks of the Nation's No. 1 problem as being "the unemployment problem which remains unsolved after seven years of fruitless effort on the part of the New Deal administration." The Savannah paper quotes the Los Angeles Times as saying:

"The great cost, the tragedy, of mass unemployment is the degradation of humanity. Men and women lose their morale, and some will never regain it. They degenerate into parasites and bring forth after their kind. The pecuniary loss runs into astronomical figures. Give each person the low productive capacity of $600 a year, and with 8,000,000 idle, we suffer a money loss of $4,800,000,000; that much purchasing power 'gone with the wind!' "

With the improvement in business, a persistent question is, Why are the idle not able to find employment? In spite of all the vast sums spent by government, both federal and local, the problem has not been met. The money might have been spent differently and to better purpose, but be that as it may, the obvious fact is notwithstanding some business improvement, the demand for unskilled labor is not sufficient to take up the slack and the real reason why demand lags is that business lacks the confidence to forge ahead.

The New Economy or New Deal, whatever it is called, talked persistently about "the more abundant life" and "free social cooperation" while the successful business man, being the source of employment, was held up to public criticism as a prince of privilege and an economic royalist. The Wagner Law, the Wage and Hour Bill can hardly be any longer regarded even by their advocates as likely to lead to increased employment. Other regulatory and restrictive legislation has had a similar effect while the burden of more and more taxes falling heavily upon employers does not clear the way very rapidly for putting more people on the payroll. Business hesitates while pauperism with all of its devastating effects has become widespread. The youth movement, recently in the limelight at Washington, is a result of what the unthinking have been taught. They look to Washington for help, and this in the face of what America should offer and still does offer youth.

The first indication that has come from a Labor organization of anything being wrong with present wage scales is found in a statement of the A. F. L. recently, indicating the possibility that rates paid certain craftsmen in the building industry are too high. In addition to this, Mr. Green has been quoted as saying that "labor must work more closely with capital and employers for the real problems of the country." These are encouraging signs which have been obscured for a long time. A sense of individual responsibility and willingness to do whatever kind of work is offered, with proper encouragement to business by the repeal of laws that are failures, will do more than all the nostrums of government to meet the problem of unemployment.

The Coming Road Program

An article on the future of highway building in *Construction* magazine quotes the following:

"Paul G. Hoffman of the Studebaker Corporation, in a recent article stated that: 'the modernizing of our street and highway facilities is a tremendous undertaking that will cost not less than 25 billion dollars to provide the 25,000 miles of superhighways we need outside the cities, and at least another 25 billion to make a good start toward modernizing street facilities within our cities. Street and highway construction and reconstruction is the biggest new industry on the horizon'.

"Dr. Miller McClintock of Yale University, speaking at the recent Construction Industry Conference in Washington regarding traffic congestion in our cities, said: 'The solution of this problem opens up the largest construction market ever in sight—for the next 25 years'."

The building of improved roads in the United States in the future is destined to so far surpass the work that has been done that development of tremendous possibilities for industry and employment is visualized.

America owns two-thirds of the automobiles of the world. Their number is increasing and the urge to possess them is being satisfied at an increasing rate. Their use has brought city and country together, supplied diversion to monotonous lives, improved health and promoted education. Urban trade has increased as a result of the general use of the automobile and farmers have found a wider and higher priced market for their products.

The building of good roads that has come largely from the use of the automobile, has increased taxable wealth with land development and better homes. And yet, considerably more than half of our road mileage remains unimproved. A vast undertaking lies ahead as the people of the United States are sold on good roads and will stand for their cost more readily than for any other item on their tax bill.

The work to be done is made more pressing by the traffic congestion and parking problem in our towns and cities. The limit of traffic movement in some of the older towns already has been reached and only can be met by modernization to include wider thoroughfares or overhead through routes as New York has found necessary.

Roads of the future must be more enduring and wider than those of the past. Those built a few years ago already are obsolete. Express highways between centers of population are becoming a necessity.

It has become a question of modernizing traffic lanes in cities, as well as outside — a tremendous program of expansion and improvement. It is well to lay plans now and proceed as may be, before conditions grow worse instead of better. It is a program that means expanded facilities for greater business, increasing wealth, enlarged opportunity.

Industrial Possibility

There appeared in a recent issue of the MANUFACTURERS RECORD an illustrated article describing an important industry being carried on at Beaufort, S. C. It is a comparatively new industry of promising possibilities if extended to other coast cities of the Southern states. It employs native labor to pack crab meat for which there is an encouraging market.

Unfortunately, this industry which should have a constantly broadening outlook in Southern and Northern markets by reason of the excellent table delicacy it is capable of supplying, is hampered by two factors—the failure of neighboring states to properly conserve their seafood supply and the lack of adequate tariff protection.

The subjoined letter shows the need of a cooperative movement among the states for what can very well develop into an industry of importance, and also the pressing necessity of an adequate tariff to meet competition from the Orient. The matter deserves serious consideration of Southern Senators and Representatives in Washington.

Editor, MANUFACTURERS RECORD:

We deeply appreciated the article entitled "Sea Food Canning At Beaufort, S. C." which appeared in the October issue of the MANUFACTURERS RECORD. The article has created much favorable comment and interest.

We believe that we have laid the foundation for a new Southern industry which has considerable possibilities. Two things at present seem necessary for its success. The first of these is protection of our crab supply. I am a native of Maryland, but because Maryland and Virginia have failed to work out reciprocal conservation measures, the supply of crabs has been so reduced that I have been forced to pack a supply elsewhere. This new industry can help any section of the Atlantic and Gulf Coast where crabs are protected.

Our second requirement is a higher tariff on the Japanese canned crab meat. At present we import approximately $6,000,000.00 worth of canned crab annually from Japan with a tariff duty of only 15 per cent ad valorem. This is a negligible tariff. This foreign product under sells ours and it is very difficult to place our product on the market against such competition. Furthermore, the taxes which I must pay to the Local, State and Federal Government proportionately far exceeds the small tariff paid by the Japanese.

We are asking Congress at its next session

to give our young industry at least a reasonable tariff protection and we certainly think that our industry should be protected so that we can compete on an equal footing with imported goods.

Blue Channel Corporation
By: Sterling G. Harris,
President.

"Where The Old South Still Lives"

A book of pictures from Natchez "where the old South still lives" charms the eye and claims thought for a by-gone day.

Modern life in its fevered way is apt to overlook many of the worthwhile things that were regarded as a prime part of existence in the days "before the war."

Natchez' pictures of lovely Southern homes recalls a time when conversation was an art, learning of the classics a requirement for every youth, and statecraft a career to be pursued.

The South, in rapidly coming again to increasing wealth and industrial development, bidding fair to rival the industrial areas of other sections of the country, will do well to hold to some of the things that are of more enduring value than the gloss and glitter of a hurried world. If, in the effort to attain the material, we lost sight of the fundamentals that have held the states of America together, our loss is great indeed.

Statecraft, leadership are at a premium today as centralized government has invaded states' rights, enacted laws that lead to discord instead of harmonious relationship, imposed conditions upon business that hampers development and initative, made the way hard by reason of fanciful ideals far removed from the plans of the founders where individual effort and liberty as watch-words made ambition attainable through hard work. Thoughts go back to a time when these things counted and we have come upon a day when they seem far removed and not as real as they were.

Has life become too hurried? Has education been along wrong lines? Have old time principles of thrift, effort, punctuality and obedience been thrown into the discard by reason of an over-powering search for wealth by an easy road?

Perhaps it would be well in seeing and writing about development in industry of a later South to visit some of the shrines of the past like Charleston and Natchez and gain inspiration anew.

Incorporated Bureaucracy

An article contributed by Senator Harry F. Byrd in this issue discusses the report submitted to Congress by government lending agencies. There are 31 corporate agencies with 1476 subsidiaries "whose financial indulgence in the nation's lending business up to now is shown to reach 25 billion dollars."

The report which took eight months to prepare is voluminous. The Public Printer estimates to print its 2,000 pages will cost $43,000, and the Secretary of the Treasury is quoted as admitting that the information in the report "is not contained in the accounting records of the Treasury Department." The report covering 32 volumes each in two parts is now available to the public. There has not been time to study the contents in detail but Senator Byrd whose resolution calling for the information was voted by Congress deals with the highlights of activities of agencies he describes as "a gigantic fourth branch of government * * * a largely uncontrolled wonderland of federal financial activity involving authority to obligate the credit of the government to a sum impossible to estimate."

Creative Enterprise

With each day's news of developments of far-reaching importance, the South, as a field of opportunity, claims increasing attention.

We print on another page an article of compelling interest as an example of creative enterprise. The story is of Rayon and the part the South has in meeting world needs at a time when war has curtailed production in other countries. There are illustrations of huge plants of the latest type that turn out in this section 73% of the total Rayon products of the United States, evidencing what private enterprise near the site of raw materials, with every favorable condition for manufacturing at hand can accomplish. The sum of $200,000,000 has been invested in the southern states in the plants of this industry and 47,000 employees, not counting officers and clerical help, are on the payrolls; a huge industry, drawing its supplies from forests, fields and streams of the southern states.

We have announced the South's Resources as an extra number of the MANUFACTURERS RECORD to be published in a few months. The facts being assembled for it are of striking significance as to what has been accomplished in the South and the opportunity for greater development. The initial prospectus, describing this extra edition, has been sent to all parts of the country in answer to inquiries which indicate that the attention of investors and industrialists is being drawn toward the South as probably never before. Instead of vanishing frontiers, here is a new frontier of vast possibilities stretching out before America. "The development of the South means the enrichment of the Nation."

INCORPORATED BUREAUCRACY

Thirty-one Corporate Agencies of Federal Government with 1476 Separate Organizations Submit Their Financial Report

THERE is now in existence for the first time a composite financial statement of 31 corporate agencies of the Federal Government and their vast network of subsidiaries whose financial indulgence in the nation's lending business up to now is shown to reach twenty-five billion dollars.

How accurate and adequate the statement is and to what extent it may be useful in developing better government no one at this time can tell, simply because the ramifications of the subject and the immensity of the volume absolutely preclude immediate analysis.

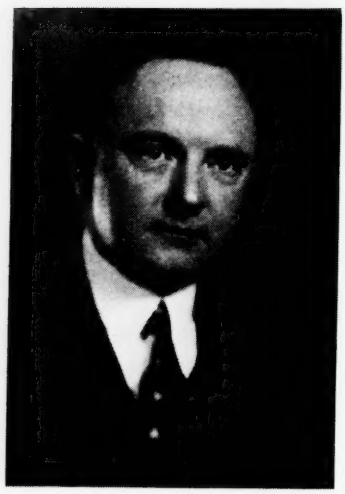
Perhaps the United States Government Printer can describe better than any one else the magnitude of the statement. He estimates officially it would cover nearly two thousand printed pages and its publication would cost the prohibitive sum of forty-three thousand dollars.

However, accurate and adequate or not, at last there is at least some kind of a composite report on information concerning a great category of vital fiscal affairs of the Federal Government which the Secretary of the Treasury frankly admits "is not contained in the accounting records of the Treasury Department."

BY

Harry Flood Byrd

U. S. Senator from Virginia



And in the report Congress finally has a base from which it may explore what appears to be a largely uncontrolled wonderland of federal financial activity involving authority to obligate the credit of the government to a sum impossible of estimate.

These agencies already have used this borrowing power, obligating the credit of the Federal government somewhere in excess of five billion dollars. In other words, the treasury is responsible for such losses as most of these agencies ultimately may incur. Whatever this contingent debt may be is not contemplated in the general statements of direct debt, so frequently referred to now as approaching its statutory limit of forty-five billion dollars.

This relation to the current precarious debt condition alone makes extremely pertinent the closest study of this report. This is particularly so because, according to the President's budget message of January 1940, seven hundred million dollars is to be withdrawn from the capital of these agencies and used as a budgetary offset in an effort to prevent the direct debt from exceeding the limit prior to June 30, 1941, the end of the coming fiscal year.

Besides the debt aspects there are numerous other remarkable characteristics of these federal corporate devices demanding study, inquiry, publicity and doubtless change for the better.

If that is a forecast, it is based upon the showing that some of these agencies, but not all, account with the Treasury; some, but not all submit to regular prescribed audit by the independent General Accounting Office; some, but not all make as much as perfunctory annual reports to Congress. There is little, if any, more than limited budgetary control. Except in few instances, they neither pay the Treasury dividends on the stock it holds, nor in any other way reimburse it for the cost of the money used in purchase of their capital stock. In many instances they present highly intricate examples of interlocking directorates and holding company hierarchies.

These agencies may be said to constitute a gigantic fourth branch of the government. Investigating the 31 corporations and lending agencies covered by the report actually means studying the financial operations of 1,476 separate organizations, when all of the subsidiaries are included.

Senate Resolution 150 requesting a survey of these agencies was introduced and passed last June, after failure of all previous efforts to procure satisfactory information from the Treasury, the Budget Bureau and the General Accounting Office which didn't have it, and from the agencies themselves.

The resolution directed the Secretary of the Treasury to prepare and transmit, in specified detail, a financial statement of the corporations and lending agencies named, including his own independent appraisal of their assets.

The Secretary of the Treasury did not make an independent appraisal of the assets because, he said, it would have been costly, required "previous maintenance of expensive cost systems," etc.

Then he went on to say such appraisals would "result in disclosure to individual debtors in some cases of the fact that the corporation or agency does not expect payment in full of its debts. In many instances this would not be in the public interest. Moreover, it is not in conformity with accepted practice observed in private business. * * *"

The report carries instead an appraisal of their own assets by the agencies themselves which amounts to little if anything more than repetition of book values.

The Secretary did not comply with at least one other notable specification—naming the principal debtors of the agencies involved.

Eight months were required to gather and compile the information requested on

the specified corporations and lending agencies and their subsidiaries. The formal report is in 32 volumes, each with two parts—one narrative and the other tabular—making a total of 64 parts. It makes available to the public for the first time an almost overwhelming insight of these instrumentalities, some chartered in the District of Columbia and others chartered under laws of states more suitable to their activities, some by their nature requiring no charter at all. Some are authorized directly by law, others are creatures of executive order and still others trace their origin to administrative act.

Largely on the basis of data furnished by the agencies themselves the report summarizes with some detail the history and development of corporate device used by the Federal government and describes the accounting and auditing procedures followed by them. In detail also there are general financial statements which are then broken down to deal with loans, investments, property, insurance, revenue and non-revenue producing activities. There are other break-downs to show operating expenses, capital charges and credits and financing, sources and uses of funds. Possibly the most amazing part of the report is that dealing with the inter-agency relationships. A diagram accompanying this section of the report at first glance reminds one of a road map full of detours.

Totals on a statement summarizing the assets of all the 31 agencies involved read as follows:

Total all assets, $15,115,957,592; loans and notes receivable $8,730,890,716; cash $732,850,946; investments (other than inter-agency) $1,350,376,886; accounts and other receivables $120,465,066; accrued interest receivable $177,091,957; real estate and business property $667,693,013; real estate and other property held for sale $880,905,469; deferred charges $15,106,305; other assets $483,521,783; total assets other than inter-agency $13,158,902,141; total inter-agency assets $1,957,055,451.

Totals on a statement summarizing the liabilities of the same agencies read as follows:

Bonds, notes and debentures $6,922,815,767; accrued interest payable $47,732,796; accounts and other payables $65,032,138; deferred credits $62,340,189; other liabilities $490,125,380; reserves $991,381,313; total liabilities other than inter-agency $8,579,427,583; total inter-agency liabilities $1,400,528,791; total all liabilities $9,979,956,374. Net worth: capital stock and non-stock propriatary interest $6,603,872,342; paid-in surplus $493,210,823; earned surplus $1,962,810,135 (deficit); reserve for appreciation (excludes appraisal increment on inter-agency assets) $1,728,188; total net worth $5,136,001,218; total liabilities and net worth $15,115,957,592.

The Secretary of the Treasury, in his letter to the Senate transmitting the report, dwells at length on qualifying statements. He says, for instance, "in considering the financial statements submitted with this report, there are several things which should be kept in mind. First, there must be considered the public interest for which the respective agencies were created to serve, and the unusual circumstances surrounding the fulfillment of such purposes. In evaluating their services it is necessary to look beyond the balance sheets and financial statements. There must be taken into consideration the effect which they have had upon the economic and social welfare of the whole country. * * *"

The advocate of the resolution has no quarrel with such qualification. The purpose of the resolution was first of all to get information otherwise unavailable. It can do the economic and social welfare of the country no harm to know the status, condition and practices of these agencies. Neither can harm come from determining to what extent and in what manner they affect the fiscal affairs of the nation.

The report shows the agencies involved have made loans on which principal and interest are in default to the amount of $1,053,000,000. They have foreclosed and hold for sale property valued at $881,000,000. The report says their expenditures of $6,214,000,000 have exceeded their revenues of $4,559,000,000 for a deficit of $1,654,000,000.

Fourteen of the agencies report they write off assets deemed worthless and adjust related reserve accounts. Other agencies follow various practices in this respect.

The figures used here cover the activities of all the agencies involved since their origin. Of the 31 agencies covered by the report, all but four have been created since 1929.

The use of corporate form for governmental agencies is neither novel nor confined to the United States. According to the Secretary's report the corporate form in this country dates back to 1781 when the Continental Congress chartered the Bank of North America. The report says it is now in use in Great Britain, the Union of Soviet Socialist Republics, Italy, France and Germany.

The history of governmental use of the corporate device as recited in the report shows, however, that recent expansion in this category of government agency is unprecedented. After the initial trial in the eighteenth century its use largely lapsed until the World War period.

As the war emergency became more acute, use of corporations increased. Such new corporate devices as the United States Emergency Fleet Corporation, the War Finance Corporation, etc., came upon the scene. Then came another period of dwindling corporate use in government which continued until the 1929 depression began to deepen. Now government corporations are almost as numerous as other types of government agencies, operating in a variety of fields—business, banking, agriculture, housing, power, public works, international finance, etc.

It is obvious that they have come into existence chiefly during periods of national emergency, but in many instances they are utilized to discharge permanent as well as temporary functions.

In many instances the record shows no reasons given to Congress for the authorization of corporate bodies. Some believe little thought was given to the adoption of this form of agency and that often the type of business conducted is similar if not identical with that performed by private corporations.

In some cases there has been no hesitancy in justifying the method with the explanation that it avoids legislative routine and allows flexibility for purposes of experimentation.

In most cases the corporations are managed by boards varying in the number of members from three to 15. One notable exception to this rule is the United States Housing Authority where management is vested in a single administrator. There are some cases, of corporations where some of the stock is privately owned, where boards are partly elected by the stockholders and partly appointed by the Federal government in varying ratios.

Except for the Tennessee Valley Associated Cooperatives, the governing boards of corporations wholly owned by the United States may be designated by law, appointed by a governmental official, or appointed by the President. The last method has been the most common. The Tennessee Valley Association Cooperatives, Inc., board is self perpetuating, members selecting their successors.

Touching upon the management practices of the corporations and agencies, the Secretary of the Treasury in his letter transmitting the report makes the notable observation that:

"Although the Secretary of the Treasury, in most cases, holds stock on behalf of the United States, he is represented on the Board of Directors of only two corporations, namely, the Federal Farm Mortgage Corporation and the Export-Import Bank of Washington."

The Comptroller of the Currency is a director of the Federal Deposit Insurance Corporation.

Continuing, the Secretary concludes that "some of the objections to the use of the corporate form of organization might be overcome if a uniform policy should be adopted by the Congress with respect to the relations of corporate agencies to the Federal Treasury, the Bureau of the Budget, the General Accounting Office,

(*Continued on page 54*)

WANTED—
A BUSINESS PILOT

BY

Dr. John J. Wicker

President Fork Union Military Academy, Fork Union, Va.

EVERY man ought to be a capitalist. Every man can become a capitalist.

If a man would resent his own indifference to thrift with the same zeal and energy that he attacks other people's resources he would at once begin to be a capitalist.

The thriftless man will not put down a dollar and let it stay put. He is never willing to begin, consequently he lives by the day, forgetting yesterday and caring nothing about tomorrow.

All responsibility connected with life and the social order are thrown off his shoulders, and strange as it may seem he has a grudge against the man who is willing, or must assume responsibility for him.

A good bank account and life insurance are the finest cures for socialism, and bad as the disease is I believe they are the best remedies for communism.

But there are others in this world besides the thrifty and the thriftless. There are the thoughtless ones.

The thoughtless class is made up of persons who are largely ruled by sentiment in relation to the thriftless and seem to be devoid of business ideas or of biological requirements in the building of a good social order.

The thriftless and the thoughtless are never concerned about debts, pay day or tomorrow; theirs is a spending program.

In this class are some of the most cultured people of our country—theorists.

They build the most beautiful airplanes ever seen, but none of them can fly. Unfortunately among these thoughtless people may be found instructors and professors. They know all about economic theories and how to solve all the problems of the present day—with the other man's money.

In this thoughtless class there are a number of splendid politicians. If they would exercise half as much business sense as they do on vote-getting they would be high class financiers.

They know all the tricks in the political trade and are experts in mob psychology, especially in election years.

What we need in this country is that every man give of his best where it is most needed.

Which of these types of people is best equipped for getting the country out of its present predicament?

It is certain the thriftless can't do it.

It is equally as certain that the thoughtless can't do it.

Politicians ruled by the thriftless can't do it. This is the failing process now in operation. It is unfair to politicians themselves that they should be governed by the thriftless and the thoughtless.

The ideals of statesmanship should never accommodate themselves to the infirmities of the politician ruled by thriftless people.

If a man is sick we send for a doctor and not for a shoemaker; if we want to build a house we send for a carpenter and not for a chauffeur; we would not ask a musician to pilot an airplane; nor a banker to run a locomotive. Every man has his specialty and the men to get us out of the woods in our economic distress are the men who first got themselves out and know the road. The men who built our great economic structure are the kind of men needed to preserve it.

I don't want a failure in business to tell me how to run my financial affairs.

Einstein perhaps knows more about higher mathematics than any living man, but it would be a mistake to put him on a piano stool if you wanted a Paderewski performance.

It is obvious that what our country needs today is not beautiful speeches backed by a charming personality, captivating people by a Houdini rhetoric, but good business brains.

Whenever and wherever the thrifty class has been in charge debts have been reduced, idle men put to work, and assets increased throughout the country.

On the other hand, when theorists have been put in the saddle and good, hard-headed business sense retired, debts have piled up, idlers have increased, graft has grown and business sent to either the poorhouse, hospital or graveyard.

We need the best brains from the best business heads to combine and work out our economic problems and not a lot of "brain-trusters" and "business busters."

No matter how much any one man knows there are a number of other people who know more. One-man rule will finally paralyze everything it touches.

It is said there are today more than 10,000,000 men out of work and the Government has the largest list on its payroll of employees ever known.

Our present program is not solving the problem, though back of the theories which have been put into practice, billions upon billions of dollars have been spent—and the largest national debt in the history of the world piled up.

For the entire country the Federal debt is $1800 for every family of four. This may mean nothing for the thoughtless and the thriftless, and certainly the unfortunates can do nothing about it, but it's something for the rest to ponder.

This, then is a matter for the thoughtful and the thrifty. As they have to provide for the huge national debt, is it not about time for those who pay the bills to run the business? If today our budget was balanced (and we are farther from it than ever before), and $500,000,000 each year was to be paid regularly on the Federal debt it would take fifty-six years to reduce the debt to where it was only five years ago.

Our interest today on the Federal debt is over $1,000,000,000 annually, and this is more than the cost of the entire Federal Government for the year 1915.

But the greatest thing is not money recovery—important as that is—far more important is the recovery of men.

From where do we get our great men? Everybody knows, or should know, that with few exceptions they are men who have endured hardships, struggle, discipline, and have known "The driving

(*Continued on Page* 54)

$200,000,000.00 INVESTED IN SOUTHERN RAYON PLANTS

Producing 73% of America's Output

Capacity Production Indicated Due to War

VARIOUS factors recently have thrown a spotlight on the rayon industry of the world and on the rayon industry of the United States in particular.

In 1912 this country produced 1,100,000 pounds of continuous filament rayon and rayon staple fiber. At that time Japan, Germany, Italy and Great Britain produced no rayon, but in 1938 Japan ranked first in production with 584,600,000 pounds; Germany was second with 471,000,000 pounds and Italy produced 268,300,000 pounds. This country in 1939 produced 384,200,000 pounds, which surpasses previous records, but this did not equal production elsewhere for the year before.

The United States does not produce as much rayon as it consumes, the comparative figures for 1938 and 1939 being 287,500,000 pounds and 384,200,000 pounds for production against 327,100,000 pounds and 462,800,000 pounds consumed.

Due to the war it is probable rayon production will decline in all European countries and especially in Germany. Reports too from Japan say that as a result of the Sino-Japanese conflict there is such an acute shortage of coal that even essential industries are seriously crippled, and rayon manufacturing will be considerably curtailed. Thus the United States assumes added importance as a producer for our own needs and for world needs.

At the present time there are 30 plants in the United States operated by 18 companies engaged in the manufacture of rayon yarn and staple fiber. Of this number 15 are in the South—one each in Georgia, Maryland and North Carolina; two in West Virginia; four in Tennessee and six in Virginia. But while the number of plants is only half that of the whole country, the capacity of Southern plants is almost 73 per cent of the entire domestic industry.

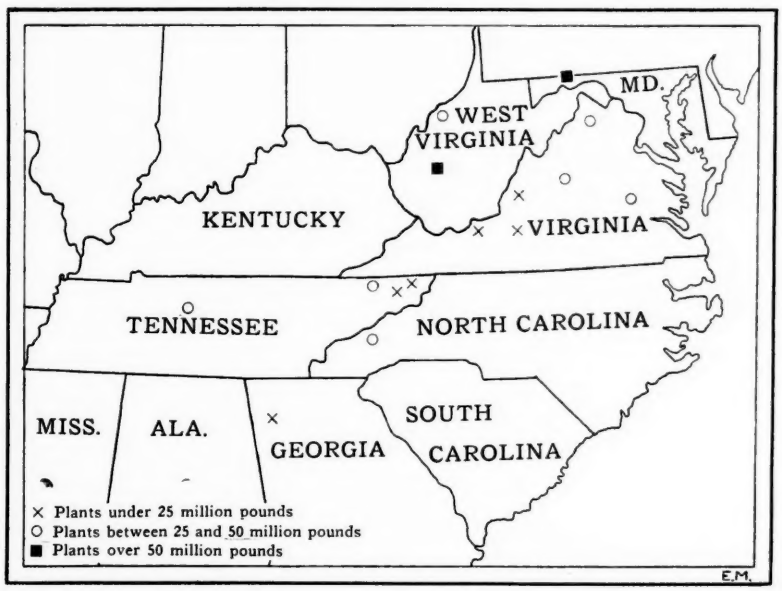
These 15 Southern plants, operated by nine companies, have an annual capacity of approximately 455,000,000 pounds. Ten of the Southern plants which employ the viscose process have a capacity of 283,000,000 pounds, while five using the acetate process have a capacity of 162,000,000 pounds, and one has a potential output of 10,000,000 pounds using the cuprammonium process. Twelve of the 15 plants manufacture rayon yarn and seven produce staple fiber.

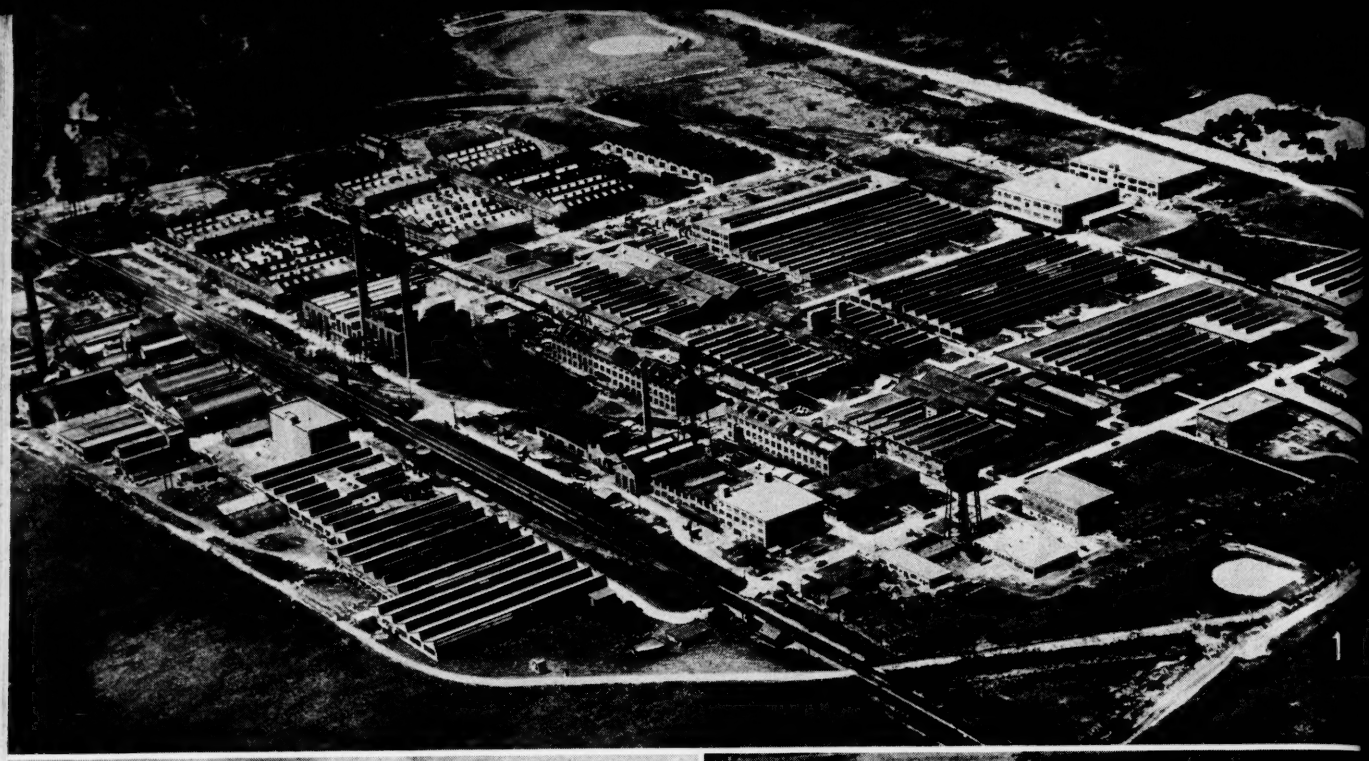
Southern production in 1939 almost equalled the total production of the entire United States in 1938, although two large Southern plants only recently have been completed, and the enlarged capacity of others was available for but part of the year. With all of these in full production, the 1939 output would have been larger. Two plants recently completed are the American Viscose Corporation plant at Front Royal, Va., and the Celanese Corporation of America's plant at Celco, Va. Probably the largest expansion was that of the American Viscose plant at Nitro, W. Va., where the capacity was almost doubled.

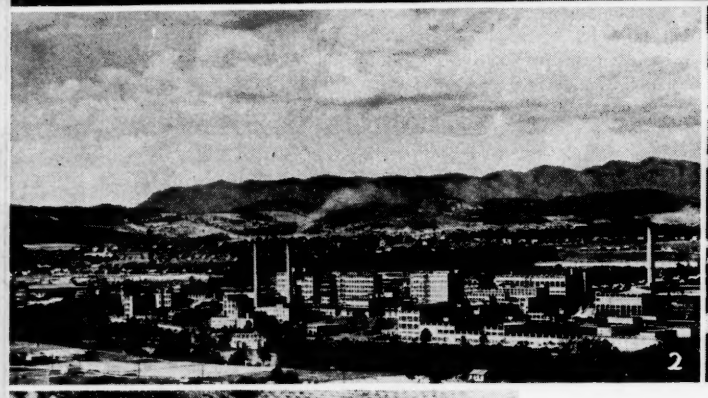
A recent report indicates that a plant to cost $5,000,000 is being considered for Greenville, S. C., with other plants at other points in contemplation.

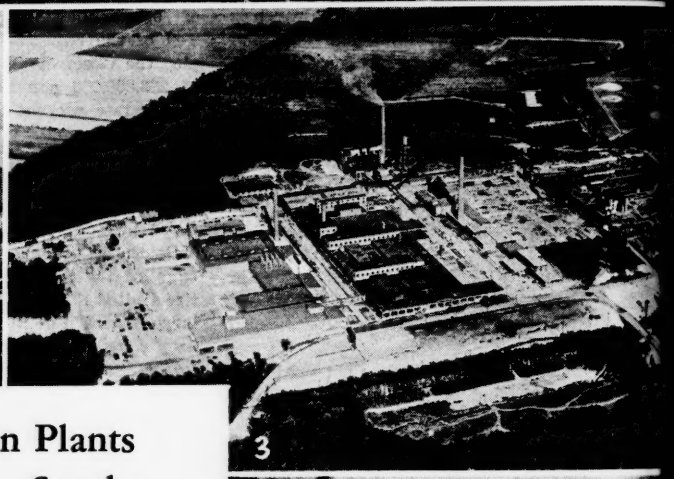
One gets an idea of the magnitude of the rayon industry of the South from the fact that Southern rayon plant sites aggregating several thousand acres have

Rayon plants of the South appear to have been located mainly in proximity to the range of the Appalachian Mountains



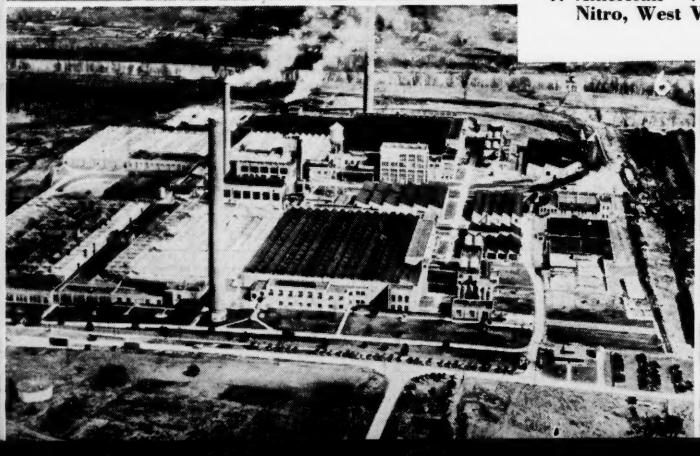


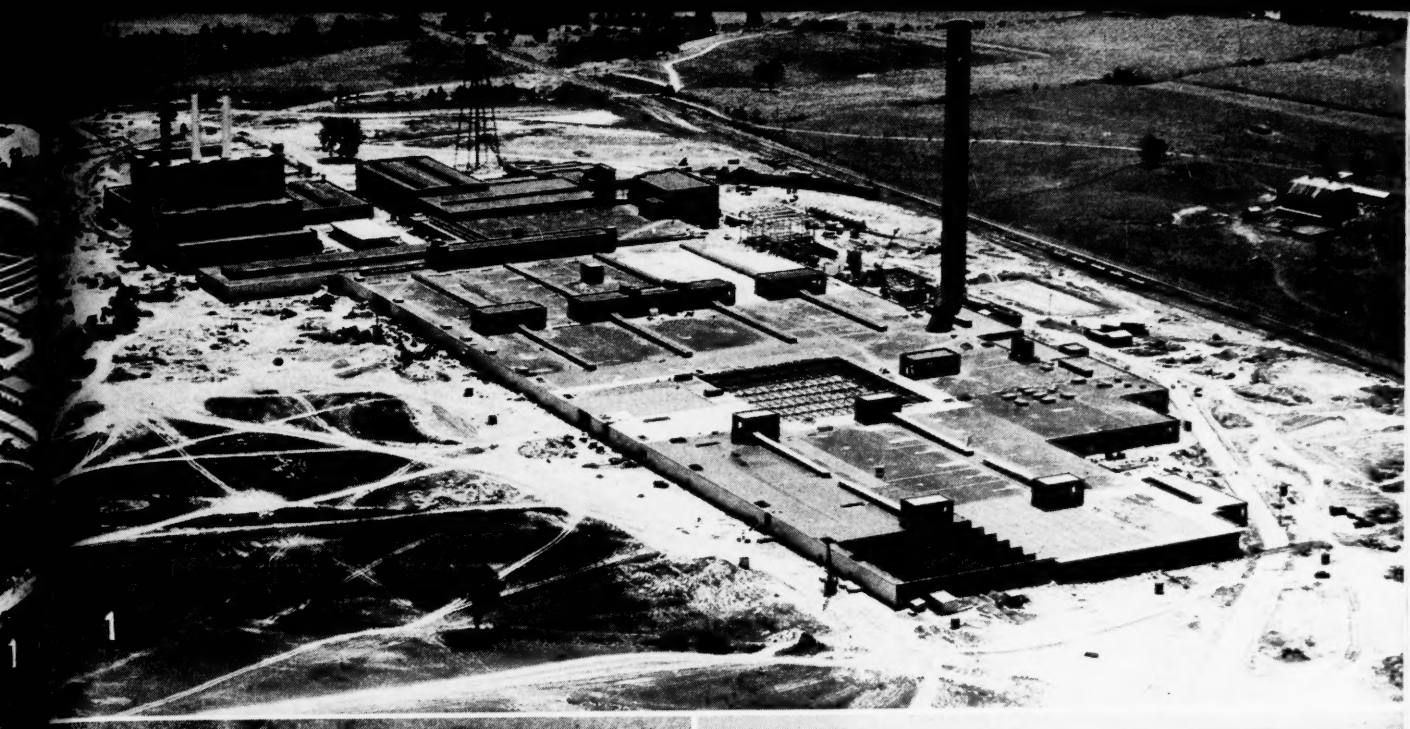


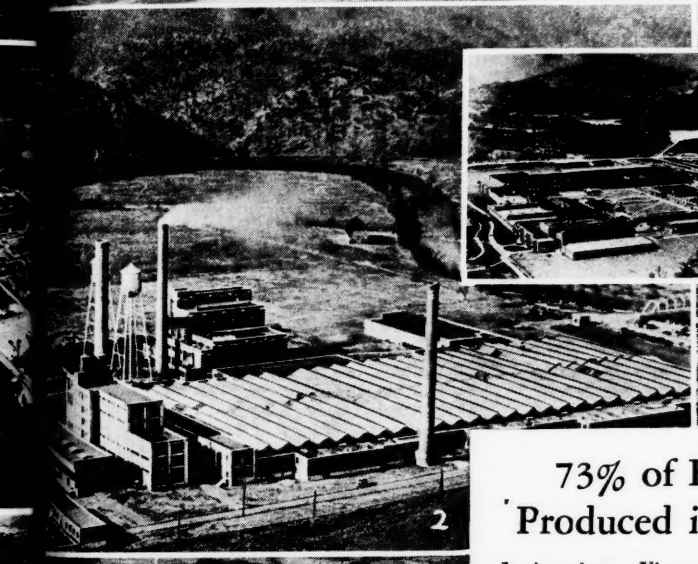


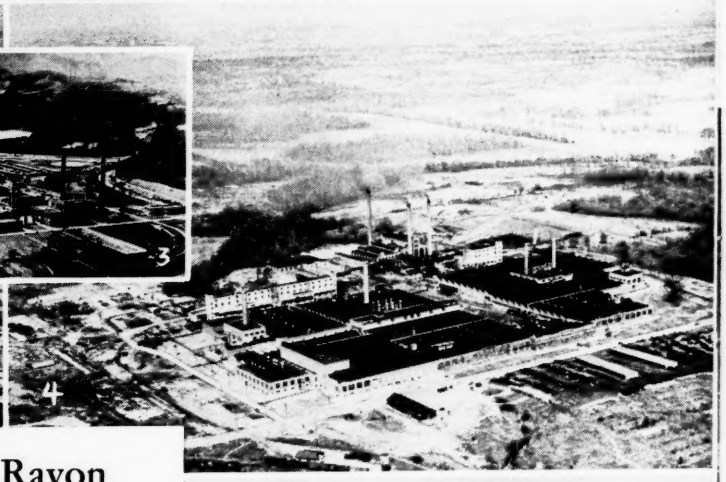
Rayon Plants of the South

1. Celanese Corporation of America, Cumberland, Maryland.
2. Tennessee Eastman Corporation, Kingsport, Tennessee.
3. E. I. du Pont de Nemours and Company, Richmond, Virginia.
4. E. I. du Pont de Nemours and Company, Waynesboro, Virginia.
5. Tubize Chatillon Corporation, Rome, Georgia.
6. American Viscose Corporation, Parkersburg, West Virginia.
7. American Viscose Corporation, Nitro, West Virginia.



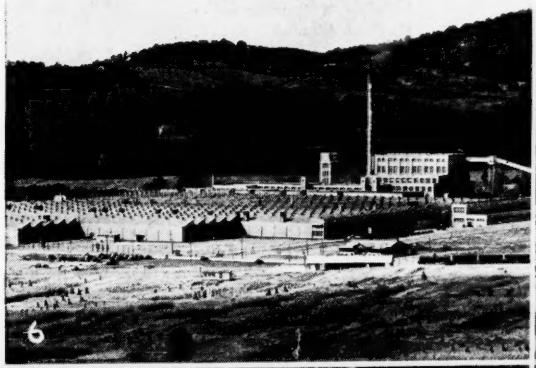


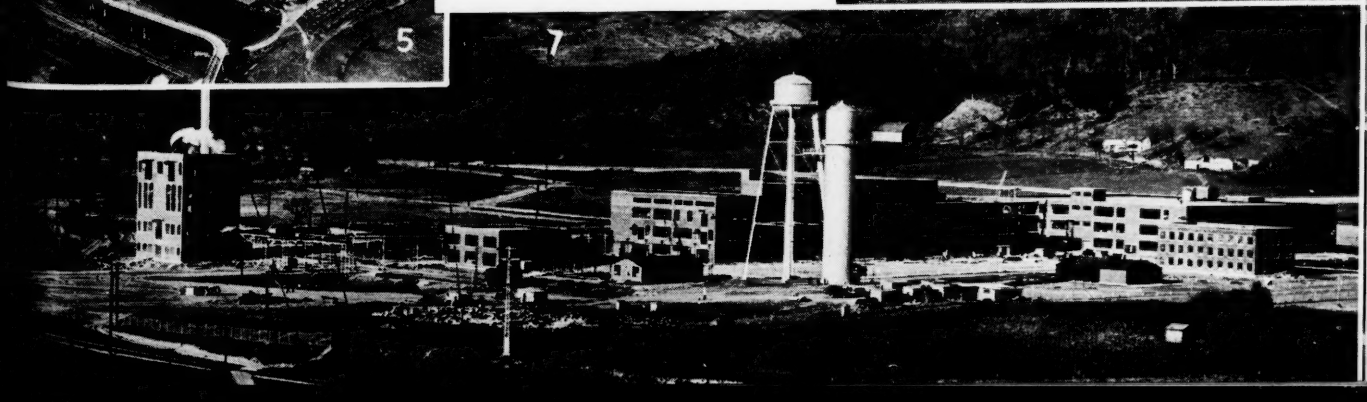




73% of Rayon Produced in South

1. American Viscose Corporation, Front Royal, Virginia.
2. Industrial Rayon Corporation, Covington, Virginia.
3. American Enka Corporation, Enka, North Carolina.
4. E. I. du Pont de Nemours and Company, Old Hickory, Tennessee.
5. American Viscose Corporation, Roanoke, Virginia.
6. North American Rayon Corporation, Elizabethton, Tennessee.
7. Celanese Corporation of America, Celco, Virginia.





combined floor space totalling not less than 22,000,000 square feet.

The estimated investment for buildings, equipment and land of the rayon industry in the Southern states is more than $200,000,000, with capital of $150,000,000. Employment is given to 47,000 wage earners in addition to salaried officers and other employees.

In all three of the processes employed in the manufacture of rayon, which in order of their volume output are: 1, viscose; 2, acetate; 3, cuprammonium, the principal raw materials used are woodpulp and cotton linters, the estimated consumption of which for the Southern plants alone amounts to 143,500 tons. Both of these materials are Southern products.

During the last ten years the use of woodpulp for rayon has been increasing, and with the prospect of commercial production of bleached sulphite dissolving pulp from Southern pines (the Fernandina, Fla., plant of Rayonier, Inc., for this purpose was reported in the February issue of the MANUFACTURERS RECORD) it remains to be seen whether bleached linters will continue to compete on a cost basis with the bleached sulphite dissolving pulp.

It is well to point out that while here is another instance of the probable decline of a cotton product, its place already is being filled by another Southern product that may be made an even more profitable agricultural crop than cotton has proved for many years.

Woodpulp and cotton linters, however, are by no means the only materials used in rayon manufacturing. In 1939, it is estimated that 322,490 tons of chemicals were used for rayon manufacture in the South. To make one pound of viscose yarn necessitates the following materials:*

Woodpulp and cotton linters	1.15 to 1.25 lbs.
Caustic soda (NaOH)	1.40 lbs.
Carbon bisulphide	0.35 lbs.
Sulphuric acid	1.70 to 1.90 lbs.
Corn sugar	0.50 lbs.
All other chemicals	0.40 lbs.

To make one pound of rayon yarn by the acetate process requires even more materials:†

Bleached cotton linters	0.70 lbs.
Acetic anhydride	2.40 lbs.
Glacial acetic acid	6.00 lbs.
Sulphuric acid	0.07 lbs.
Cicetone	4.00 lbs.
Titanium dioxide	0.02 lbs.

However, in the acetate process about 7.86 lbs. of acetic anhydride and glacial acetic acid, and 3.60 lbs. of acetone are recovered in a reclamation process.

Certain of these chemicals are made by the plants for their own consumption, but it is important to note that nearly every chemical used is obtainable in one or more of the Southern states. In the case of sulphuric acid, more than half the entire country's production comes from the South.

In the manufacture of viscose, between one and two hundred gallons of water are used per pound of yarn produced: with the acetate process the quantity averages 1,000 gallons per pound. Together, some 150,000,000,000 gallons of water are used in the manufacture of rayon each year in the South alone.

*The Viscose Process by H. B. Vollrath in *Rayon and Stable Fiber Handbook*, 3rd edition.

†The Cellulose Acetate Process by H. deW. Smith in *Rayon and Staple Fiber Handbook*, 3rd edition.

RAYON PLANTS IN THE SOUTH

And the Process They Use

American Bemberg Corporation	Elizabethton, Tenn.	Cuprammonium
American Enka Corporation	Enka, N. C.	Viscose
American Viscose Corporation	Roanoke, Va.	Viscose
	Front Royal, Va.	Viscose
	Parkersburg, W. Va.	Viscose
	Nitro, W. Va.	Viscose
Celanese Corporation of America	Cumberland, Md.	Acetate
	Celco, Va.	
E. I. du Pont de Nemours and Co.	Old Hickory, Tenn.	Viscose
	Richmond, Va.	Viscose
	Waynesboro, Va.	Acetate
Industrial Rayon Corporation	Covington, Va.	Viscose
North American Rayon Corporation	Elizabethton, Tenn.	Viscose
Tennessee Eastman Corporation	Kingsport, Tenn.	Acetate
Tubize Chatillon Corporation	Rome, Ga.	Acetate and Viscose

Business Opinion On Reciprocal Trade Treaties

Before Congress finally approved continuation of reciprocal trade agreements there was considerable discussion both pro and con.

In an attempt to ascertain the opinion of American business men on this subject the MANUFACTURERS RECORD sent out a questionnaire to a representative group throughout the country, engaged in a wide variety of activities. The questions and their answers follow:

1. **So far reciprocal trade treaties have been made with twenty foreign countries. Should the number be increased?**
66.7 percent answered yes; 26.3 percent said no; and 7 percent had no opinion.

2. **Should the present reciprocal trade treaties be continued?**
66.7 percent said yes; 23.3 percent said no; 3.3 percent said they were only in favor if the agreements are modified; 6.7 percent had no opinion.

3. **Will there be any appreciable change in American wage scales by reason of reciprocal trade treaties?**
63.3 percent were of the opinion there would be no change; 26.7 percent thought the wage scales would be lowered; 3.4 percent were doubtful; and 6.6 percent had no opinion.

4. **Do you think these treaties open up new channels of trade for the United States?**
63.4 percent answered yes; 20 percent said no. Among other replies to this question were the following: no new channels would be opened but discriminatory barriers to normal trade would be removed by these treaties; some new channels would be opened but at the expense of other outlets. Several thought there would be no material increase of trade while others had no opinion.

5. **What is likely to be the effect, if any, upon your business?**
30 percent expected the effect to be bad and 58 percent said it would be good. The remainder either had no opinion or were uncertain of the outcome.

6. **Do you use imported products in your business?**
58 percent answered yes; 20 percent said no; 16.6 percent said they use only a neglibible quantity and 5.4 percent made no reply.

7. **If so, have they [the imported products] been reduced in price by reason of reciprocal trade treaties so far entered into?**
23.4 percent said no; 16.6 percent said yes; 60 percent expressed no opinion.

8. **Do you manufacture, sell or export goods that have to compete under reciprocal trade treaties with similar goods brought in from abroad?**
53.3 percent answered yes; 33.3 percent said no; and 13.4 percent made no reply.

9. **Have you any interest in any foreign enterprise likely to benefit under reciprocal trade treaties?**
16.4 percent said they had such an interest; 76.6 percent had no such interest; 7 percent did not answer.

10. **Certain agricultural products mentioned in reciprocal trade treaties are admitted here under favorable terms and are competitive with home grown products. Under the circumstances are agricultural subsidies for our producers advisable?**
26.6 percent had no opinion; 3.4 percent said subsidies are advisable; and 70 percent stated that subsidies are not advisable.

UNITED STATES EXPORTS CONTINUE HIGH IN JANUARY

THE value of United States merchandise exported in January was $358,000,000—approximately as high as the near-record monthly figure for December, 1939, according to the U. S. Department of Commerce.

Shipments of American goods abroad in January were maintained at the high December level chiefly by reason of unusually heavy exports of raw cotton to the United Kingdom, France, and Japan.

Although a slight drop is usual at the beginning of the year, shipments in January were influenced principally by factors growing out of the war, now in its sixth month.

Cotton exports during January totaled 1,027,000 bales valued at $58,797,000 compared with 807,000 bales valued at $43,303,000 in December, 1939 and 290,000 bales valued at $14,719,000 in January, 1939.

Exports of cotton during the past month reached the highest monthly total since November, 1935 when 1,135,000 bales were exported and the highest total for January since January 1927 when 1,074,000 bales were shipped abroad.

Total exports for the six months of the current cotton season (August to January) aggregated 4,161,000 bales valued at $225,150,000 compared with 2,192,000 bales valued at $112,532,000 for the corresponding six months of 1938-39, an increase of 1,969,000 bales or 89.8 per cent in quantity and $112,618,000 or 100.1 per cent in value.

As compared with figures for the six months of 1938-39 greater shipments were recorded for all important destinations except Germany and German-occupied territories. No cotton shipments for Germany were reported since September and for Poland since August.

Exports to principal countries for the six months, August-January just passed and the year preceding, follow:

	Bales		Dollars	
	1939-40	1938-39	1939-40	1938-39
United Kingdom	1,333,000	285,000	71,276,000	14,438,000
Japan	583,000	528,000	30,966,000	26,680,000
France	488,000	294,000	26,729,000	15,498,000
Italy	311,000	173,000	16,973,000	8,837,000
China	279,000	39,000	14,991,000	1,807,000
Canada	219,000	131,000	11,564,000	6,364,000
Spain	190,000	1,519	10,765,000	81,000
Sweden	171,000	58,000	9,492,000	2,978,000
Netherlands	145,000	45,000	8,024,000	2,378,000
Belgium	136,000	62,000	7,489,000	3,200,000
Germany	(a)19,000	200,000	(a)1,483,000	10,556,000
Poland	(b) 5,000	97,000	(b) 290,000	5,178,000

(a) August and September, (b) August

Heavy shipments of cotton in the past five months were attributable largely to the replenishment of abnormally low stocks in certain European countries, the accumulation of stocks in certain European countries, the accumulation of stocks in others against the uncertainties growing out of war conditions, and the improved competitive position of American cotton.

The value of aircraft exports in January, at $25,000,000, remained large even as compared with record shipments of $29,000,000 in December, during which month a number of previously delayed consignments to the United Kingdom and France were cleared. France was the principal purchaser in each month.

While the principal gains in exports of United States merchandise in January over December were in shipments to the United Kingdom and France, the latter country moving close to second rank among individual export markets, there were increases also in export trade with other leading markets, including the Netherlands, Norway, Russia, Japan and Australia.

As compared with exports of $210,000,000 in January, 1939, when export trade was at the lowest level in recent years, the value of January shipments represented an advance of 70 per cent. Although there were increases in exports of a wide range of commodities to practically all leading foreign markets as compared with January a year ago, the aggregate gain of approximately $148,000,000 was concentrated in a few export classifications. Shipments of machinery and vehicles rose from $59,000,000 in January 1939 to $96,000,000 in January

(*Continued on Page 56*)

VALUE OF EXPORTS, BY GROUPS AND PRINCIPAL COMMODITIES
January, 1940, as compared with December, 1939, and January, 1939 and 1938
(Thousands of Dollars)

	Jan., 1940*	Dec., 1939	Jan., 1939	Jan., 1938
Total exports of U. S. Merchandise	357,861	357,450	210,260	285,772
Animals and products, edible and inedible	14,407	10,380	10,837	10,997
Vegetable food products and beverages	18,205	17,371	24,706	34,592
Vegetable products, inedible	16,657	17,221	13,766	22,096
Leaf tobacco (Bright flue-cured)	4,984	4,159	7,532	15,112
Textile fibers and manufactures	72,893	56,664	21,741	41,851
Wood and paper	9,900	10,020	6,539	8,571
Sawmill products	2,789	3,076	2,731	3,489
Non-metallic minerals	38,503	45,123	31,967	37,358
Coal	3,611	3,574	2,594	2,855
Petroleum and products	29,342	35,417	26,002	30,434
Crude petroleum	5,805	6,112	5,815	8,748
Metals and manufactures	65,719	66,752	25,476	32,497
Iron and steel-mill products, total	33,389	33,777	13,525	20,745
Iron and steel scrap	3,468	3,957	3,247	6,041
Ferro alloys	1,644	3,464	640	1,030
Aluminum, except manufactures	2,603	2,545	797	277
Copper, refined	14,758	14,310	4,461	4,312
Machinery and vehicles	96,050	104,912	58,888	80,104
Machinery, total †	47,319	51,192	32,596	42,829
Electrical machinery and apparatus	9,314	10,866	6,720	7,767
Radio apparatus	1,808	2,397	1,467	1,624
Power-generating machinery	1,495	1,613	746	3,491
Construction and conveying machinery	1,637	2,400	1,479	1,934
Metal-working machinery	14,500	13,298	6,673	6,265
Tractors and parts	2,484	3,666	2,663	4,266
Automobiles, parts and accessories	23,766	24,826	21,396	34,396
Aircraft, engines and parts	24,965	28,894	4,896	2,879
Chemicals and related products	17,247	19,502	8,915	9,709
Industrial chemicals and specialties	7,643	9,253	3,728	3,964
Miscellaneous	8,281	9,504	7,424	7,997

† Includes industrial machinery, electrical apparatus, agricultural implements, office and printing machinery, railroad equipment and vehicles other than automobiles and aircraft.
* Statistics for January, 1940, are preliminary and subject to revision.

THE PERMANENCE OF SOUTHERN PULP MILLS

BY

A. E. Wackerman,

Professor of Forest Utilization School of Forestry, Duke University, Durham, N. C.

DURING the last few years, when large pulp mills were being constructed in all sections of the South, some fear was expressed that the large demands of the mills for pine wood might result in rapid depletion of southern forests.

Now that the first group of pulp mills has been built and the manufacture of pulp and paper has begun, it is obvious that this new industry is laying a permanent foundation through perpetuating wood supplies and is taking active steps, each mill in its own territory and collectively in the entire South, to solve the problems of growing wood. Southern pine forests that attracted this pulp industry, therefore, are being protected and carefully cut. There will be no reckless timber cutting permitted insofar as the mills can forestall it. This is merely a manifestation of the sound business judgement and foresight that has characterized the establishment of pump mills at strategic points throughout the South.

Forestry Guides Pulp Mills' Policies

The pulp and paper industry in the South already has recognized that specialized attention to its wood supply is essential, and competent men, skilled in forest management and utilization have been engaged to formulate and effectuate sound commercial forest policies. Foresters have charge of the acquisition, organization, management and administration of company forests, the purchase of pulpwood from other timber owners, and cooperation with timber owners for the encouragement of timber growing by them for continuous and frequent wood harvests rather than clean cutting for only one harvest in a generation.

The utility of southern forests has markedly increased with the advent of pulp and paper mills. Pulpwood for these mills has created new markets for trees, mostly pine trees, that are too small, too crooked, or too knotty for satisfactory saw logs, poles or other similar products. With so much wood utilization it might seem that the pulp mills compete for timber with other users and processors of southern woods. In some instances, unfortunately, this is the case, but it is not necessary. Pulpwood in the South, except in particular instances, is a by-product of growing forests and should be so considered.

Pulp Markets Permit Salvage of Saw Timber Waste

Fast growing young forests rapidly become too dense as the trees get larger and to maintain orderly and reasonably fast growth such stands must be thinned of their surplus trees. In southern forests this operation begins at an early age, frequently as young as 15 years, and should be continued at 3 to 5 year intervals until the stand has matured. Much of the timber cut in the periodic thinnings, especially that removed at early ages, is too small for usual commercial use, yet it is of ideal size for pulpwood.

Mature stands of timber being cut for saw logs, poles, ties, or other timber products are only partly usable for these products because the trees taper to small diameters in the tops. Many lumbermen, at first resentful of the encroachment of the pulp mills are finding that they can advantageously cooperate with them. Forest owning lumber companies find that they can thin their young timber and market the culled-out trees for pulpwood, thus improving the quality of their future saw timber and at the same time increasing the rate of growth. Such thinning or forest improvement operations yield a reasonable net return making the operation doubly attractive as otherwise the trees would have to remain standing to the detriment of the forest.

Then too, lumbermen find that they can sell as pulpwood the remaining tops after the trees have been cut for saw logs and thereby obtain income from what formerly was waste wood and forest fire menace. From actual experience in a number of pine logging operations throughout the South it has been found that from one-fourth to one-half a cord of good quality pulpwood can be produced for every thousand feet of saw logs cut. This, too, at such a cost that the owner frequently obtains a reasonable net income or stumpage return from the salvage operation. Were it possible to utilize for pulpwood all waste topwood produced in cutting saw timber for logs, normally about 8 to 10 billion feet of southern pine annually, there would be from one to two million cords of pulpwood produced, or nearly half of the total requirement of all the mills per year.

A pulp mill's demonstration of integrated utilization and partial cutting. The sign states "Selectively Cut for Pulpwood: 117 trees cut 1938; 163 trees left; next cut 1943." All of the trees left could have been cut for pulpwood now, as in 1943 they will be too large. In all likelihood the best sections of the trees cut in the future will go into choice saw logs and only the small top lengths into pulpwood.

Pulpwood Markets Improve Turpentine Farming

Working longleaf or slash pine trees for naval stores is a major industry in the Southeast but after three to five years, on the average, the trees are abandoned as uneconomical for further working.

Much of the worked-out timber is either too small above the turpentine faces or too scattered to permit its utilization for saw logs. The worked-out trees usually are nearly girdled by the abandoned faces and frequently are severely fire damaged and, as a rule, grow but a negligible amount, barely enough to remain alive. Such stagnant timber occupies large areas of forest land, preventing or limiting the establishment of new tree crops that would otherwise rapidly mature into merchantable timber. Worked-out turpentine trees, therefore, have long been a major problem in keeping southeastern forests productive, because they occupy land to the exculsion of new crops of timber.

The markets for pulpwood offer a means of utilizing this timber and even those portions of the trees with faces can frequently be used if they are not burned and charred and if they do not contain nails or other metal. Turpentine farmers in the naval stores region, therefore, now find their small worked-out timber an asset rather than a liability because it can be sold to the pulp mills.

According to information developed by the Forest Survey of the South, conducted by the U. S. Forest Service, there were, in 1934, 11,264,000 cords of worked-out turpentine timber standing in the Southeastern naval stores producing region alone, which includes only the longleaf and slash pine forest areas of Florida, Georgia and South Carolina, totalling 35,000,000 acres. This is only a comparatively small portion of the entire forest area of the six southeastern states which contain 115,000,000 acres of forest land.

It would take 10 years to utilize the 11,264,000 cords of worked-out timber standing in 1934 if it were cut at the rate of 3500 cords per day. If it were all cut at one time it would make a pile of pulpwood four feet high, four feet wide, and 17,000 miles long. A very substantial amount of the pulpwood requirements of Southeastern pulp and paper mills, therefore, can be obtained from worked-out turpentine timber, the cutting of which will materially improve the rate of timber growth in the region. Worked-out timber comprises only 8⅓ percent of the total stand of pine found by the Forest Survey in the same area, which gives some indication of the large amount of timber available in this region alone.

It has been estimated by the Forest Survey that over a million and a half cords of pine timber that has yielded fully of its resin is released as worked-out timber each year by naval stores operations. It is good forestry to cut and use this worked-out timber wherever it retards the growth of adjacent un-worked trees or obstructs the establishment of new crops of trees.

Integrated utilization of southern forests as being practiced by the lumber, naval stores and pulp industries points to an understanding of the basic problem of maintaining adequate timber for all industries, present and prospective, that are or may be expected to draw upon them for raw materials.

South's Pulp Mills Practice and Promote Timber Growing

It is not surprising, therefore, to find that the forest industries of the South, including pulp and paper, are taking active steps to provide timber for all. This goal is being achieved through forest ownership and management for permanent timber yields and through mutual cooperation.

Lumber companies and naval stores processors through their regional trade associations as well as individually for some time have been active in practicing improved methods of growing and harvesting timber. Being long established industries their programs and achievements are more widely known than those of the much newer pulp mills. For this reason emphasis is placed, here, on what the pulp and paper mills are doing and have accomplished in protecting their future from a scarcity of timber.

Perhaps offering more promise of achieving actual material results at an early date than the other fields of activity is the policy of forest ownership by pulp companies and the placing of the company owned forest lands under the management or supervision of technically trained foresters for the permanent production of timber crops. This policy is partly to protect large investments in pulp and paper plants from unduly large depreciation charges; and partly because the industry actually wants to stay in the South and establish permanent operations rather than move again in 20 years to South America, Siberia, or some other remote region for another temporary period of exploitation. The pulp industry has matured and is, at least in the South, assuming the responsibilities of forest ownership and has settled down to permanence with no fears of the future so far as timber supplies are concerned.

A typical large southern kraft pulp mill requires 1,000 cords of wood per 24 hours of operation. That is, of course, a great deal of wood, yet as the State Foresters of Southern states and others have many times pointed out, Southern pine forests, given protection against fire and reasonably good cutting practice, will grow on the average at least one cord of wood per acre yearly.

A pulp mill requiring 1,000 cords of wood a day which would make about 650 tons of kraft paper would ordinarily require 325,000 cords of wood per year or the annual growth only from an area of 325,000 acres of protected and managed forests. Most of the mills established in the South have already purchased and placed under management enough acreage to supply continuously at least half of their future requirements. Intensified forestry on these lands would possibly multiply their productivity enough to meet their entire requirements should future developments make this advisable. In the best interest of the citizens of the South and particularly farmers and other owners of small areas of timberland it is important that the pulp mills continue to purchase wood in large amounts in the open market and not find it necessary to obtain their wood requirements from a very limited area under their own control.

If this were to materialize, independent

(*Continued on page 58*)

Photo U. S. Forest Service

Top—A southern pulp company plows fire breaks to prevent fires from destroying seedlings that will soon be pulpwood size. Bottom—A pulp company in the South cuts only its small trees for pulpwood leaving the best for more valuable products.

FEDERAL CONTROL IN THE GUISE OF MINE SAFETY

BY

John D. Battle
Executive Secretary
National Coal Association

THE federal mine inspection bill now pending in Congress opens a new vista of centralized federal control within a sphere heretofore solely the province of the states. It contemplates, with respect to all coal mines, duplicating present inspection, investigation and accident prevention by state agencies pursuant to state mine safety laws and regulations, with a federal inspection and investigation service under the jurisdiction of the Department of the Interior.

The federal inspections and investigations, and the reports to be required from the operating companies, are to be ostensibly of a "fact finding" character. The proponents lay stress on the fact that under the terms of the bill, the federal inspectors can do no more than investigate and recommend and publicize. There is to be at the outset no absolute federal control over mine operations and safety measures.

But the manifest purpose as evidenced by the recitations contained in the bill and in the arguments in its behalf, is to pave the way for federal standards of safety, federal regulations and federal control, and federal enforcement.

The immense job of annual federal inspection of all coal mines and the investigation of mine accidents and the reports provided for in this bill, would be a fruitless undertaking unless in the end it was to be coupled with mandatory authority. How else could it be argued that this proposal for the creation of a federal mine inspection service would be the means of promoting mine safety or saving human life.

The present proposal made its first public appearance when identical bills were introduced in Congress last May by Senator M. M. Neely of West Virginia in the Senate and Rep. Kent E. Keller of Illinois in the House. These bills undertook to confer upon the Secretary of Interior blanket authority, either with the utilization of existing agencies or the creation by him of new agencies, to inspect and investigate all coal mines with respect to "health and safety conditions, accidents involving bodily injury or loss of life, and causes of occupational disease."

The proponents rested their argument on the proposition that coal mining is a "hazardous occupation," that accidents are numerous, that state mine inspections and safety agencies are all right as far as they go but are not enough; that the present U. S. Bureau of Mines is all right as far as it goes but it is not enough; that what is needed is a new federal agency, a federal inspection and investigation service to overlap and "to coordinate" safety activities and "to cooperate" with the state mine safety agencies.

The fact is that every state wherein coal is mined has state laws, state mining bureaus and safety agencies, and multitudinous regulations, most of them of long standing.

All expert testimony is to the effect that the dream of uniformity of mine safety laws on a nation-wide basis is one which is inherently impossible of fulfilment because of the vastly different natural conditions existing in the occurrence of coal in the various coal regions and states; that the regulations applying to mines in one state will not be even remotely applicable to those in another state; and that the present set up of State inspection department police power over the mines within the state is far more flexible and sensible than to have all such activities emanating from and controlled by a federal bureaucracy in Washington.

The U. S. Bureau of Mines created in 1910 for the purpose among others of "increasing safety, preparing and publishing reports of inquiries and investigations into mine accidents" has a creditable record.

The report of the Bureau for the fiscal year 1939 referred to the fact that "the first year of the Bureau's existence was darkened by 17 major disasters which killed 464 miners in all. Improvement seemed painfully slow for the first two decades but the third witnessed heartening progress. It is therefore a pleasure to announce that the fiscal year 1939 was the first since statistics have been on record in which there was no major mine disaster."

Secretary of Interior Ickes in his own annual report last year stated that in the period covered by the operations of the U. S. Bureau of Mines, "major coal mine explosions decreased approximately ninety per cent."

The State Mine Departments and Safety Agencies in Pennsylvania, West Virginia, Kentucky, Alabama, and various other states where coal is mined, came forward to oppose the bill on the ground that it was not only an unnecessary duplication of the work being performed by the states but would in the long run be apt to be prejudicial and disruptive of the state services.

The Mine Inspectors Institute of America adopted condemnatory resolutions. Coal operators throughout the country, speaking through the National Coal Association and its affiliated district and local associations, and the Anthracite Institute and the American Mining Congress opposed the bill. They contended that legislation of this character was unnecessary and unjustified; that it would not promote mine safety but on the contrary would be disruptive of an existing system whereunder the accident ratio has steadily diminished and mining operations as respects safety have steadily advanced; that it constituted further unwarranted invasion of the rights and prerogatives of the states, probably an illegal invasion—as beyond the constitutional limits of federal power—but in any event contrary to sound public policy; that it was the opening wedge (if enacted and upheld) in the drive to take out of the hands of the states and to centralize in a federal bureaucracy, the control of coal mining operations.

It deserves to be said that the operators of the coal mines are vitally concerned with this question of safety—and in every step designed to diminish mine accidents. They have spent years of time and many millions of dollars in this endeavor. They are prompted not alone by humanitarian considerations, not alone by state laws and regulations on this subject, but also by the profit motive—for mine accidents take a financial toll as well as a human toll. Forty-seven states have workmen's compensation laws of some kind. The premium on this insurance, out of which accident claims are paid, is a sizeable item in operating costs. The premium rate is based on the hazard and on the experience. As safety measures reduce the hazard, the insurance cost is lowered.

The coal industry wants to do everything within its power to operate mines safely, but it sees in this measure nothing but strife, trouble, and conflict between authorities.

INDUSTRIAL RESEARCH

IN various issues of the MANUFACTURERS RECORD throughout each year are printed articles and items describing new discoveries usually of a kind which offer opportunities for new industries and the utilization of Southern products. During 1939, there appeared, among other things, accounts of the research work being done to find new uses for cotton: the development of plastics and other products from farm crops; how research has benefited the naval stores industry by finding new materials and additional sources of gum turpentine; and the story of the world's first air-conditioned blast furnace at Woodward, Ala.

In the field of textiles, two notable accomplishments have attracted public attention—Nylon, a derivative of coal, water and air produced by E. I. du Pont de Nemours and Company, is now being commercially made for hosiery and other textile purposes. This is of interest to the South because of the $2,500,000 plant expansion being made at Belle, West Virginia for manufacturing Nylon intermediates. The other new textile fiber, Vinyon, is also a chemical derivative made by the Carbide and Carbon Chemicals Corporation for processing by the American Viscose Corporation. Several other new fibers also have recently appeared and more are in course of experimentation made from the soybean.

With forest products probably the most outstanding developments have been those connected with pulp and paper manufacturing as well as their by-products, considerable progress being made with the pulping of southern hardwoods while the Forest Products Laboratory at Wisconsin has done much with the utilization of recovered lignin. The highlight in this field however, is the commercial production of rayon pulp from southern pine by the sulphite process by Rayonier, Inc.

These are but a few of the many results which recently have come from the country's laboratories engaged in industrial research. Most of them, together with those in the fields of foods, chemicals, metallurgy, petroleum, minerology, paints and varnishes, fats and oils, and resins are the result of years of trial and error painstakingly carried out without any thought but that of eventual accomplishment.

Industrial research has not only accomplished a tour de force recognizable in virtually every phase of our lives but it has become an indispensable part of every industry and no large firm today is or can be without its own research laboratories.

In spite of the fact that industrial research now is the principal source of new production methods and new or improved products, only twenty years ago 297 companies interrogated by the National Research Council reported having 307 laboratories. Yet in 1938, the same source found 2,237 laboratories operated by 1,769 companies—an increase of 595 per cent in companies and 730 per cent in laboratories.

Of the 297 companies in 1920, 265 employed 7,367 people while 1,722 of the companies reporting in 1938 employed 44,292 with an average of 25.7 employes per company.* Forty-five companies together employed half the total and ranged from 172 to 4,000 persons each and approximately two-thirds of these companies have plants of one kind or another in the South.

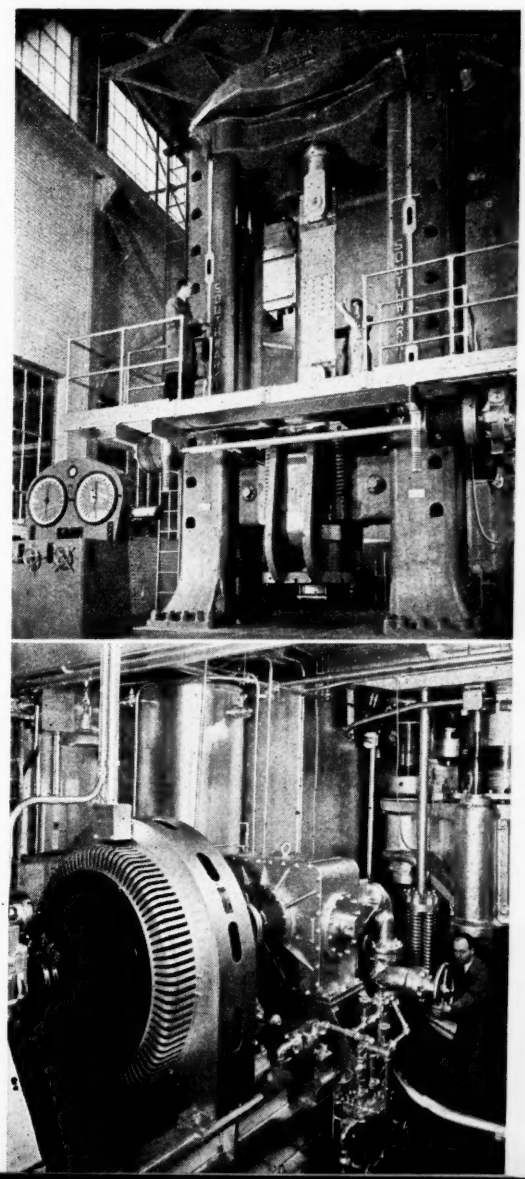
In 1939, Dr. William A. Hamor, Assistant Director of the Mellon Institute, Pittsburgh, Pa., states that there were nearly 48,000 persons employed in research for 2,000 companies and estimates that between $190,000,000 and $215,000,000 was spent by these firms for industrial research.† This means that at the present time there is as much money being spent each year in the United States for industrial research as is invested in the entire pulp and paper industry of the South.

In 1920 only 23 of the laboratories mentioned were in the South and six states had none. But in 1938 the number had increased to 255—an increase of 1100 per cent or nearly twice as much as for the rest of the country. Today not a single southern state is without industrial research laboratories and there are more laboratories in this region than in the Pacific, Mountain and West North Central regions combined.

The principal industries and states in which those industries operate laboratories in point of size are: petroleum and by-products—Arkansas, Louisiana, Oklahoma, Texas, and West Virginia; chemicals and allied products — Alabama, Florida, Georgia, Kentucky, Louisiana, Maryland, Missouri, North Carolina, Tennessee, Texas, Virginia and West Virginia; consulting and testing laboratories (no specific industry)—Alabama, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, Missouri, North Carolina, Oklahoma, South Carolina, Tennessee, Texas and Virginia; iron and steel and their products but not including machinery—Alabama, Kentucky, Maryland, Missouri, Tennessee and West Virginia; food and kindred products — Georgia, Kentucky, Louisiana, Maryland, Missouri, and Virginia; stone, clay and glass products—Alabama, Georgia, Kentucky, Louisiana, Maryland, Mississippi, Missouri, North Carolina, Tennessee, Texas, Virginia and West Virginia. Among the other industries with laboratories in the South are electrical machinery together with apparatus and supplies, public utilities, forest products, paper and allied products, non-ferrous metals and their products.

(*Continued on Page* 56)

The new Templin precision metal working machine recently installed in the Aluminum Research Laboratories of the Aluminum Company of America. Below, the operating machinery located below the floor. The entire height of the machine is 40-ft.—25-ft. above the floor and 15-ft. below. It is capable of exerting a force of 3,000,000 lbs. in compression and 1,000,000 lbs. in tension.



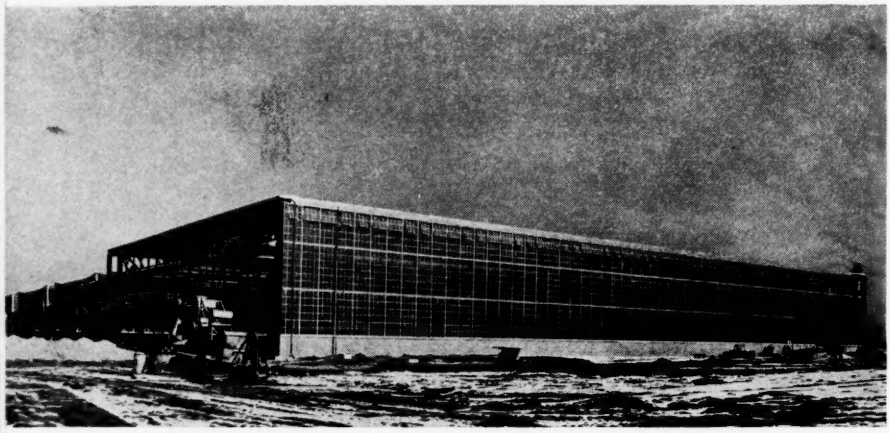
*Industrial Research and Changing Technology—a National Research Project of the Works Projects Administration.

†Industrial Research in 1939 by William A. Hamor in INDUSTRIAL & ENGINEERING CHEMISTRY, News Edition of January, 1940.

SOUTH'S CONTRACTS UP AS INDUSTRIAL WORK GAINS

FEBRUARY'S $65,313,000 total of contracts awarded in the sixteen Southern States was a favorable upward swing from the lower January figure, it was revealed by compilations made from reports published in the daily issues of CONSTRUCTION.

Industrial contracts, which more than doubled when compared with those of the preceding month made the most substantial gains in the various fields of construction. Both private and public building rose, although governmental engineering projects, as well as highway and bridge work, fell below the levels established in the first month of this year.



The encouraging increase in industrial contracts occurred in face of reports of declining manufacturing activity throughout the country and included a $5,000,000 newsprint mill for Tennessee, the second plant of its kind to be started in the South within the past several years. The first newsprint mill had started manufacturing operations about a month before the Tennessee Valley Paper Mills, Inc., announced that the construction contract had been awarded for this new plant which is to be established at Savannah, Tenn.

Power plant expansion in the South was given added impetus by reports that utilities in Kentucky, Maryland, Missouri and Virginia would proceed on important projects, several involving expenditures of a couple million dollars each.

Louisville Gas & Electric Co., an affiliate of the Standard Gas & Electric system, announced that the $2,300,000 addition to its Canal station is being designed by the Public Utility Engineering & Service Corp. Work is scheduled to start in about three months and upon its completion the station's capacity will be increased from 37,000 to 62,000 kilowatts. The project is in addition to a tentative 1940 construction budget of $2,015,615.

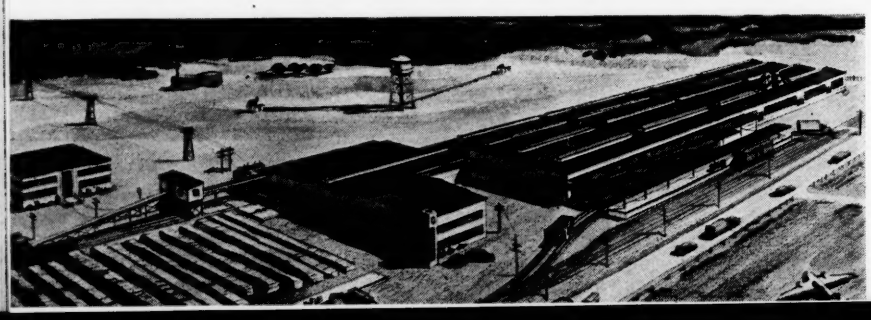
The $3,500,000 budget appropriated for 1940 by the Virginia Public Service Co. and its subsidiaries includes a $2,000,000 allotment for a 15,000-kilowatt steam generating plant to be erected adjacent to existing facilities at Alexandria, Va. More than $500,000 of the budget fund will be used for additional lines, services, meters and transformers to serve approximately 10,000 new customers.

Announcement was made by the Eastern Shore Public Service Co. that the $1,000,000 power plant extension at Vienna, Md., would be designed by Utility Management Engineering forces of Reading, Pa. Equipment to be installed includes a 7,500-kilowatt steam turbo-generator and complementary high pressure boiler capacity. Completion of the work is slated by January 1941.

Expenditures proposed in 1940 by Virginia Electric and Power Co., Richmond, will probably total $3,676,460. About $1,000,000 is to go for completing work now in progress, including the addition to the Twelfth Street power plant at Richmond and a new hydro-electric station on the old James River and Kanawha Canal. Consumers' electric service extensions will cost $300,000; transformers and meter equipment, $480,000; and transmission line improvements, $450,000.

Union Electric Co. of St. Louis, Mo., obtained the permit to alter its electric generating and steam heating plant. Two new generating units will be installed to replace fourteen old boilers under a $1,600,000 improvement program. The building alterations will cost about $179,000. Northern Virginia Power Co., Winchester, Va., proposes a $200,000 construction program.

Texas is to be the site for a large soap factory and Mississippi will get a big building material manufacturing plant under plans announced during February. Procter & Gamble Co., of Cincinnati, Ohio, proposes the soap plant which will be built at Dallas at a cost estimated around $1,000,000. The building material plant will cost $2,000,000. It will be constructed at Meridan, Miss., by the



Above—The first Southern plant of Hollingsworth & Whitney Co., New England paper manufacturers, is shown almost completed at Mobile, Alabama.

Center—The South's newest airplane factory as it nears completion at Nashville, Tenn., for the Stinson division of the Aviation Manufacturing Corp.

Left—The $2,000,000 proposed factory at Meridian, Miss., for the Flintkote Co., manufacturers of building materials. The plant will employ 300 men, exclusive of cutting crews and foresters, and will have an annual capacity of 65,000,000 square feet of insulation board products. The new plant site is located in the heart of 1,000,000 acres of Southern pine to ensure a constant economical supply of raw materials.

The new 190,000 square foot addition to the Hanes Hosiery Mills at Winston-Salem, N. C. This expansion raises the plant's capacity to 5,300,000 pairs of hose annually.

Flintkote Co., Inc. A complete line of wood fibre decorative and structural insulation and wall board products is to be manufactured. Construction will start soon and it is expected that production will begin early in 1941. Over 100 carloads of machinery will be installed. Annual capacity is placed at 65,000,000 square feet of board products.

A similar project was also proposed at Bogalusa, La. Gaylord Container Corp., St. Louis, Mo., will expend $1,000,000 for enlarging its paper mill, thus increasing its facilities for making kraft wrapping paper and cardboard container material from 500 to 600 tons daily.

Two plants to utilize forest products in Georgia are to be constructed. Filtered Rosin Products, Inc., already operating plants at Brunswick, Valdosta and Douglas proceded with construction of another near Baxley. The Gum Turpentine Farmers' Co-Operative is soon to start work on a turpentine plant at Waycross. The 30,000-barrel capacity of this plant will later be augmented by other facilities at Vidalia.

Contract for the $500,000 mill building of Sand Springs Textile Mills, Inc., Sand Springs, Okla., headed the list of textile expansions. Among other textile projects were those of Pacific Mills at Columbia, S. C.; Waverly Mills, Laurinburg, N. C.; Kenneth Cotton Mills, Walhalla, S. C.

Davison Chemical Company's Read Phosphate division at Nashville, Tenn., is understood to be considering immediate reconstruction of its burned plant. Another fertilizer project was located near Charlotte, where Piedmont Fertilizer Co. let contract for a plant at Pinoca, five miles out from the North Carolina metropolis.

The 1940 budget of Monsanto Chemical Co. which maintains its headquarters in St. Louis, Mo., and operates plants in the South at Nitro, W. Va., Monsanto, Tenn., and Anniston, Ala., will exceed the 1939 expenditure of $4,200,000. Corn Products Refining Co. is reported to be considering erection of a sweet potato starch plant at Citronelle, Ala.

Several important developments were proposed in the oil fields. A recycling and natural gasoline plant to be built in Jim Wells County, Texas, for W. R. Davis & Co., Houston, will have a daily capacity of 60,000,000 cubic feet. United Gas Pipeline Co., Dallas, Texas, started work on a $450,000 gasoline plant 25 miles south

(*Continued on page 60*)

Statistics of South's Construction

	February, 1940 Contracts Awarded	February, 1940 Contracts to be Awarded	First Two Months 1940 Contracts Awarded
PRIVATE CONSTRUCTION			
BUILDING			
Assembly (Churches, theatres, auditoriums, fraternal)	$992,000	$3,450,000	$2,225,000
Commercial (Stores, restaurants, filling stations, garages, etc.)	2,085,000	2,460,000	4,661,000
Residential (Apartments, hotels, dwellings)	6,753,000	7,155,000	12,305,000
Office	280,080	905,000	868,000
	$10,110,000	$13,970,000	$20,059,000
INDUSTRIAL	$19,546,000	$30,561,000	$29,311,000
PUBLIC CONSTRUCTION			
BUILDING			
City, County, State, Federal	$10,637,000	$12,519,000	$17,027,000
Housing	9,154,000	21,032,000	19,341,000
Schools	1,178,000	15,342,000	2,556,000
	$20,969,000	$48,893,000	$38,924,000
ENGINEERING			
Dams, Drainage, Earthwork, Airports	$3,252,000	$34,020,000	$6,232,000
Federal, County, Municipal Electric	2,426,000	41,647,000	5,461,000
Sewers and Waterworks	491,000	8,031,000	1,571,000
	$6,169,000	$83,698,000	$13,264,000
ROADS, STREETS AND BRIDGES	$8,519,000	$9,094,000	$23,017,000
TOTAL	$65,313,000	$186,216,000	$124,575,000

BUSINESS WEEK SAYS:

"Doors . . . should receive far more attention than they ordinarily do in factory planning, because they can have a direct effect on the flow of production."

Right!

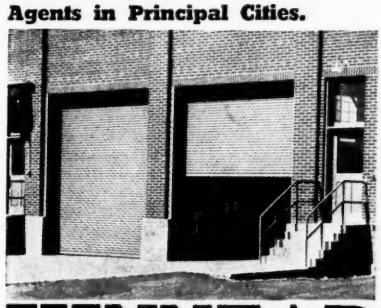
And you can make sure of having doors that affect production the **right** way by installing Kinnear Rolling Doors. They will not only help keep traffic and production flowing smoothly year after year — they save time and money!

Kinnear Rolling Doors coil compactly above the opening. They open out of the way, out of view, out of reach of damage by wind or vehicles. They save floor and wall space, because they open **straight upward.** And their famous interlocking-slat construction forms a rugged all-steel curtain that not only stands the gaff of hard, daily use, but keeps intruders **out,** repels fire, and is weatherproof.

They operate quickly, smoothly and easily at all times. Snow, ice, swollen ground or similar obstacles can't get in their way. And if you wish, they can be operated electrically, with push-button controls at any number of convenient points.

Kinnear Rolling Door performance has been thoroughly proved in plants like yours, over a period of more than forty years. Send today for details, outlining your problems, if you wish. There's no obligation.

Write The Kinnear Manufacturing Co., 1600-1620 Fields Ave., Columbus, Ohio. Offices and Agents in Principal Cities.



KINNEAR
ROLLING DOORS

New Industrial Plants and Expansions in the South During February, 1940

Ala., Birmingham—George A. Hormel Co.; packing plant
Ala., Birmingham—Sloss-Scheffield Steel & Iron Co.; furnace repairs $100,000
Ala., Boaz—Jerry Roden; cheese plant .....
Ala., Citronelle—Corn Products Refining Co.; sweet potato starch plant .....
Ala., Mobile—Ballard & Ballard Co.; plant addition .....
Ala., Opelika—American Service Co.; quick-freezing locker plant .....
Ala., Opelika—Builders Lumber & Supply Co.; plant .....
Ark., Batesville—Roy Jeffery Lumber Co.; lumber kiln and planing mill .....
Ark., Pine Bluff—Pine Bluff Coffin Co.; plant reconstruction
Ark., Little Rock — Consolidated Chemical Laboratories, Inc.; improvements .....
Fla., Miami—Florida Linen Supply Co.; laundry 140,000
Fla., Miami—Miami Mills, Inc.; box board mill .....
Fla., Tallahassee—Tallahassee Coca Cola Bottling Co.; plant improvements 30,000
Ga., Albany—Atlantic Coast Line Rwy. Co.; freight depot and office reconstruction .....
Ga., Albany—Georgia Stages; bus station .....
Ga., Albany—Yancey Tractor Co.; plant repairs 20,000
Ga., Atlanta—Atlanta Journal Company; plant addition....
Ga., Augusta—H. H. Claussen Bakery; bakery addition 60,000
Ga., Baxley—Filtered Rosin Products, Inc.; naval stores plant .....
Ga., Columbus—Citizen's Oil Company; gasoline and oil storage tanks 25,000
Ga., Columbus—Columbus Coca Cola Bottling Co.; bottling plant .....
Ga., Dalton—J. S. Bates Spread Co.; plant .....
Ga., Griffin—Charles Aycock; automotive building .....
Ga., LaGrange—LaGrange Coca Cola Bottling Co.; plant..
Ga., Savannah — Savannah Electric & Power Co.; plant alterations 15,000
Ga., Vidalia—Meadows Turpentine Co.; turpentine still ... 15,000
Ga., Waycross — Gum Turpentine Farmers Cooperative Assn.; turpentine, rosin plant .....
Ga., Waynesboro — Waynesboro Coca Cola Bottling Co.; bottling plant .....
Ky., Louisville—Louisville Coca Cola Bottling Co.; bottling plant 75,000
Ky., Louisville—Louisville Gas & Electric Co.; plant addition 2,300,000
Ky., Louisville—Moran Freight Depot; building 58,000
La., Baton Rouge—B. F. Goodrich Co.; super-service station
La., Baton Rouge—Interurban Transportation Co.; bus station 12,000
La., Baton Rouge—Standard Oil Co. of Louisiana; dock 950,000
La., Bogalusa—Gaylord Container Corp.; paper mill expansion 1,000,000
La., Lafayette—Teche Greyhound Lines; bus station .....
La., New Orleans—Herrin Motor Lines; freight and terminal building .....
La., Shreveport—Tri-State Transit Company; bus station
Louisiana—United Gas Pipe Line Co.; gasoline plant 450,000
Md., Baltimore — Crown Cork & Seal Company; storage building .....
Md., Baltimore—Flynn & Emrich Co.; storage building ....
Md., Baltimore—Frankfort Distilleries; plant addition ....
Md., Baltimore—Hendler Creamery Co.; plant alterations..
Md., Baltimore—Holtite Manufacturing Co. (rubber heels, soles)—plant addition .....
Md., Baltimore—Maryland Glass Corp.; office building addition .....
Md., Baltimore—National Retinning Co.; factory .....
Md., Baltimore—Urban Laundry; laundry .....
Md., Hagerstown—Maugansville Elevator & Lumber Co.; grain elevator 40,000
Md., Oakland—Carnation Co.; milk receiving plant 25,000
Md., Sparrows Point—Bethlehem Steel Corp.; chemical & metallurgical laboratory .....
Md., Upper Marlboro—Tobacco Packing Co.; tobacco plant
Md., Vienna—Eastern Shore Public Service Co.; power plant expansion 1,000,000
Miss., Greenwood—J. Y. Downing & Son; packing plant
Miss., Jackson—Knox Glass Bottle Company; metal cap plant .....
Miss., Jackson—Tri-State Transit Co.; bus station 63,000
Miss., Meridian—Flintkote Co., Inc.; building material plant 2,000,000
Mo., Kansas City — Kansas City Southern Railway Co.; warehouse reconstruction .....
Mo., St. Louis—Barford Chevrolet Co.; display and garage building .....
Mo., St. Louis—Christ Frieling; truck terminal 15,000
Mo., St. Louis—Handlan, Inc.; railway supply factory 25,000
Mo., St. Louis—Monsanto Chemical Co.; 1939 budget 4,200,000
Mo., St. Louis—Union Electric Co.; power plant expansion 1,600,000
N. C., Charlotte—Calco Chemical Div., American Cyanamid Co.; office building .....
N. C., Charlotte—Charlotte Pepsi Cola Bottling Co.; bottling plant .....
N. C., Charlotte—Dayton Rubber Manufacturing Co.; rubber products plant .....
N. C., Charlotte—Duke Power Co.; rural electric lines .....
N. C., Charlotte—Observer Printing House of Charlotte; printing plant addition 25,000
N. C., Charlotte—Piedmont Fertilizer Co.; fertilizer plant
N. C., Clarkton—Tide Water Power Company; sub-station
N. C., Durham—Big Boy Bottlers of Durham, Inc.; bottling plant 30,000
N. C., Gastonia—Carter Traveler Company; plant addition
N. C., Greensboro—R. L. Swain Tobacco Company; cigarette plant .....
N. C., Laurinburg — Waverly Mills, Inc.; warehouse reconstruction .....
N. C., Lexington—Dixie Furniture Company; plant addition .....
N. C., Salisbury—Arey Brick & Lumber Co.; rebuilding program 30,000
N. C., Shelby—M. G. Brooks; bottling plant 80,000
N. C., Wilmington—Wertheimer Bag Co.; new equipment
Okla., Blackwell—Blackwell Mill & Elevator Co.; Workhouse and intake elevator reconstruction .....
Okla., Sand Springs—Sand Springs Textile Mills, Inc., mill building 500,000
Okla., Oklahoma City—Loving & Loving Truck Lines; truck terminal 12,000
Okla., Tulsa—Carter Oil Co.; geophysical laboratory 100,000
Okla., Tulsa—Tulsa City Lines; garage enlargement 14,000
S. C., Columbia—Pacific Mills; modernization program....
S. C., Greenwood—Eastville Sportswear Corp.; shirt factory
S. C., Newbury—J. Thad McCrackin & Associates; abattoir
S C., Pickens—Poinsett Lumber Co.; lumber mill .....
S. C., Spartanburg—J. A. & R. H. Chapman; bus terminal
S. C., Taylors—Southern Bleachery & Paint Works; bleachery addition 50,000
S. C., Walhalla—Kenneth Cotton Mills; plant addition ...
Tenn., Bruceton—Bruceton Industrial Corp., garment plant building 45,000
Tenn., Chattanooga—Silver Motor Expres Co.; warehouse, terminal, office 25,000
Tenn., Chattanooga—Southern Natural Gas Company; 50-mile gas line 500,000
Tenn., Columbia—Deam Marble Works; reconstruct plant
Tenn., Henderson—Salant & Salant, Inc.; clothing plant
Tenn., Hohenwald—General Shoe Co.; shoe plant 60,000
Tenn., Memphis—Shelby Paper Box Co.; box plant .....
Tenn., Nashville—Nashville Coal Co.; coal carbonizing plant 600,000
Tenn., Savannah — Tennessee Valley Paper Mills, Inc.; newsprint plant 5,000,000
Tenn., South Pittsburg—Star Woolen Mills; equipment installation .....
Tex., Alice—Continental Oil Co.; warehouse and office building .....
Tex., Austin—Austin Tribune; newspaper and office building
Tex., Austin—Capital City Lumber Co.; office, lumber shed 20,000
Tex., Corpus Christi—Amsco Pipe Line Co.; crude oil pipe line .....
Tex., Corpus Christi—Central Power & Light Co.; power plant building .....
Tex., Dallas—Collins-Davoust Paint Co.; factory building
Tex., Dallas—Procter & Gamble Co.; soap manufacturing plant 1,000,000
Tex., Dallas—Pure Ice & Cold Storage Co.; alterations ....
Tex., Dallas—Standard Brands, Inc.; yeast plant .....
Tex., Houston—Houston Lighting & Power Co.; service building 49,000
Tex., Houston—Houston Oil Field Material Co., Inc.; oil field material plant 50,000
Tex., Houston—Houston Packing Company; cold storage plant 30,000
Tex., Houston—Lone Star Bag & Bagging Co.; warehouse, repairs 25,000
Tex., Houston—L. G. Norris; laundry .....
Tex., Houston—Sanitary Laundry; laundry plant 15,000
Tex., Houston—Snow White Laundry & Dry Cleaners; building .....
Tex., Houston—York Oil Field Supply Co., Inc.; office and shop 10,000
Tex., McAllen—Rio Grande By-Products Corp.; citrus processing plant 500,000
Tex., New Braunfels—Texas Scouring & Wool Mfg. Company; brush plant 50,000
Tex., Port Lavaco—A. Pennington; quick-freezing plant, meat market 13,000
Tex., Rio Hardo—Rio Hardo Community; cold storage plant 10,000
Tex., San Antonio—Yellow Cab & Baggage Co.; building 35,000
Tex., San Antonio—San Antonio Machine & Supply Co.; building .....
Tex., San Antonio—Fine Silver Mfg. Co.; overall factory addition .....
Tex., Vernon—Vernon Meat Company; meat packing plant 150,000
Tex., Weslaco—George W. Hackney; packing plant .....
Texas—W. R. Davis & Co.; recycling and natural gasoline plant .....
Texas—Roeser & Pendleton, Inc.; recycling plant 130,000
Va., Alexandria—Virginia Public Service Co.; 1940 budget 3,500,000
Va., Richmond—Richmond Dairy Co.; dairy plant 45,000
Va., Richmond—Virginia Electric & Power Co.; 1940 budget 3,676,000
Va., Virginia Beach—Norfolk Southern Railway Co.; transportation center .....
Va., Winchester—Northern Virginia Power Co.; 1940 construction program 200,000
W. Va., Bluefield—Pocahontas Fuel Company; colliery reconstruction .....
W. Va., Huntington—Appalachian Electric Power Co.; substation .....
W. Va., Red Star—Star Coal & Coke Corp.; warehouse, store, office reconstruction .....
W. Va., Sistersville—Bowser Sales & Trading Corp.; milk evaporating plant .....
W. Va., Slagle—Logan County Coal Corp.; tipple, store, theatre reconstruction .....
W. Va., Wheeling—Tillings-Belle Vernon Co.; ice cream plant 59,000

The Brawn Patrol

AGAIN IN 1939! For FIVE Straight Years *MORE* Heavy-Duty* Internationals were bought than *ANY OTHER TWO MAKES COMBINED*

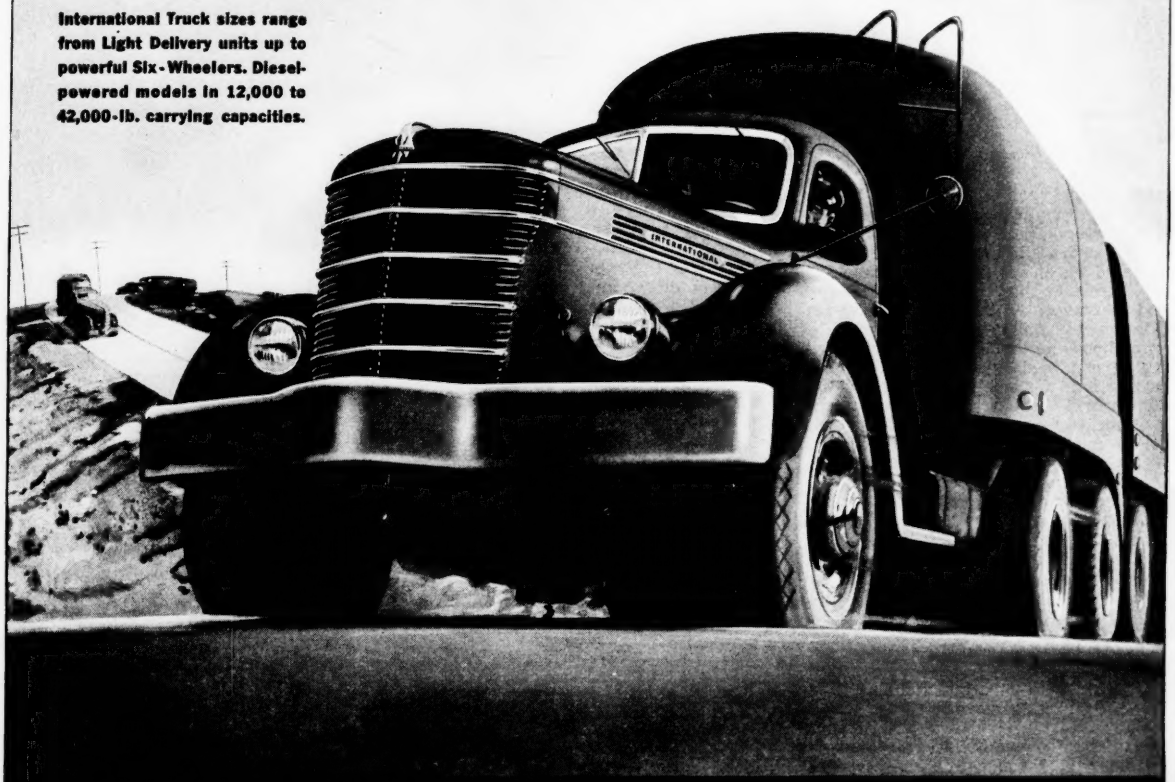
INTERNATIONAL HARVESTER COMPANY
(INCORPORATED)
180 North Michigan Avenue Chicago, Illinois

Sold by International Dealers and Company-Owned Branches.
Outside U. S. A. by Affiliated Companies and Distributors.
Cable Address: Harvester, Chicago

* Heavy Duty means all trucks rated at 2-ton and over.

U. S. registration figures from R. L. Polk & Co.

International Truck sizes range from Light Delivery units up to powerful Six-Wheelers. Diesel-powered models in 12,000 to 42,000-lb. carrying capacities.

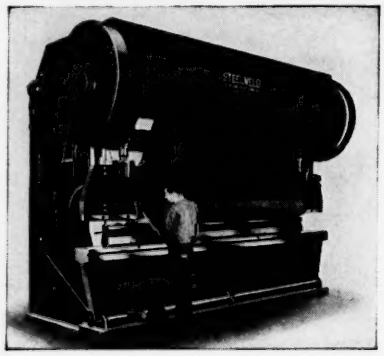


INTERNATIONAL TRUCKS

New Ways of Doing Things

Steelweld Bending Press

Announcing the addition of Model J-12 to its line of Steelweld Bending presses, the Steelweld Machinery Division of The Cleveland Crane and Engineering Company, Wickliffe, Ohio, states that the press will handle plate 12′ by 5/16″ between housings and up to 14′ 0″ over total length of bed and ram. Longer plate may be handled by extending bed and ram either on one or both ends, the press illustrated having a double end extension. Like other Steelweld presses the J-12 has a one-piece all-welded frame which will remain rigid for the life of the machine. The ram is operated by two eccentrics, one on each side of the



Model J-12 Steelweld Bending Press

machine, and each is provided with three extra large main bearings and an eccentric bearing. The bearings are automatically lubricated by two oiling units mounted on either side of the machine. All gears are protected with metal covers and shafts located at the rear of the machine away from possible damage of crane hooks and bent-up plates. Of modern streamlined appearance, the press may be used for bending, forming, blanking, drawing, rubber-forming and multiple-punching operations. Several operations may be handled by passing the work successively through various dies set in position along the length of the machine. Approximate overall dimensions of the unit are: length, 15 feet, 6 inches; depth, 7 feet, 4 inches; height, 11 feet. The usual deep 18-inch throat, which is standard for Steelwelds, is provided.

Self-Locking Rivet Bolts

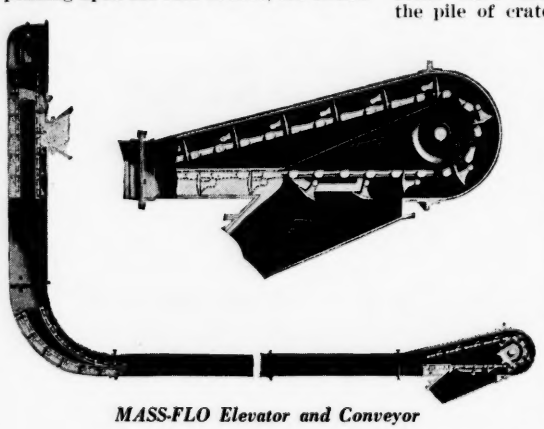
Literature illustrating and describing the Dardelet "Rivet-Bolt" which is widely used for structural steel connections in lieu of field driven rivets is being distributed by the Dardelet Threadlock Corporation, 55 Liberty Street, New York, manufacturers of this product. The use of these bolts, it is claimed, makes stronger field connections for structural steel and saves money on steel erection for buildings, bridges, tanks, stacks and towers. Used for column splices, beam to column and other connections, they are declared to be cheaper, tighter and stronger, as shown under severe service conditions in mill buildings with heavy electric traveling cranes, heavy stamping or forging machinery, and in towers for cable-way conveying systems.

Fans For Air Circulation

The Torrington Manufacturing Company, Torrington, Conn., originator of the well known AIROSTOCRAT line of quiet propeller fan blades, announces a complete new series of 3-blade fans for air circulator work. Previously made only in 20-inch, 24-inch and 30-inch diameters, these blades are now offered in diameters of 10, 12, 14, 16, 18, 20, 24 and 30 inches. By slightly increasing the blade pitch on the new fans, the company claims to have obtained performance in free air which is equivalent to the performance of its 4-blade AIROSTOCRAT fans of equal diameters. Designed primarily for operation in free air, the blades are also excellent for light pressure work, such as evaporative coolers and similar applications. Blades are insulated from the mounting spiders, resulting in smooth and quiet operation, and are offered in the same standard finishes as the AIROSTOCRAT 4-blade line of fans.

For Handling Granular Material

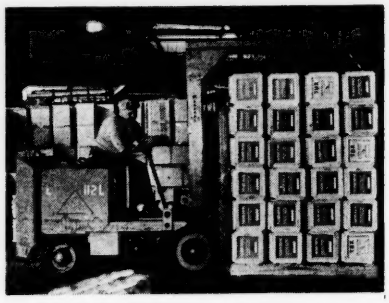
Offering a low-cost and unique method of handling granular materials such as cereals, coal, sawdust, soap chips, soy bean meal, chemicals, etc., the MASS-FLO Elevator-Conveyor has been announced by The Jeffrey Manufacturing Company of Columbus, Ohio. The unit is simple in design and construction, consisting of a steel casing through which solid pivoted flights, spaced at intervals on a single strand of chain, move the material horizontally or vertically in a solid mass or with partial load. An enlarged view of the discharge point shows how the flights are discharged of their load by means of a tripper, and since each flight carries a full or partial load, depending upon the rate of feed, the MASS-FLO may be emptied after feed stops. Fed or discharged at any point, the elevator-conveyor handles material with little agitation, thus practically eliminating breakage and degradation. The unit requires small installation space and is self-feeding and self-cleaning.



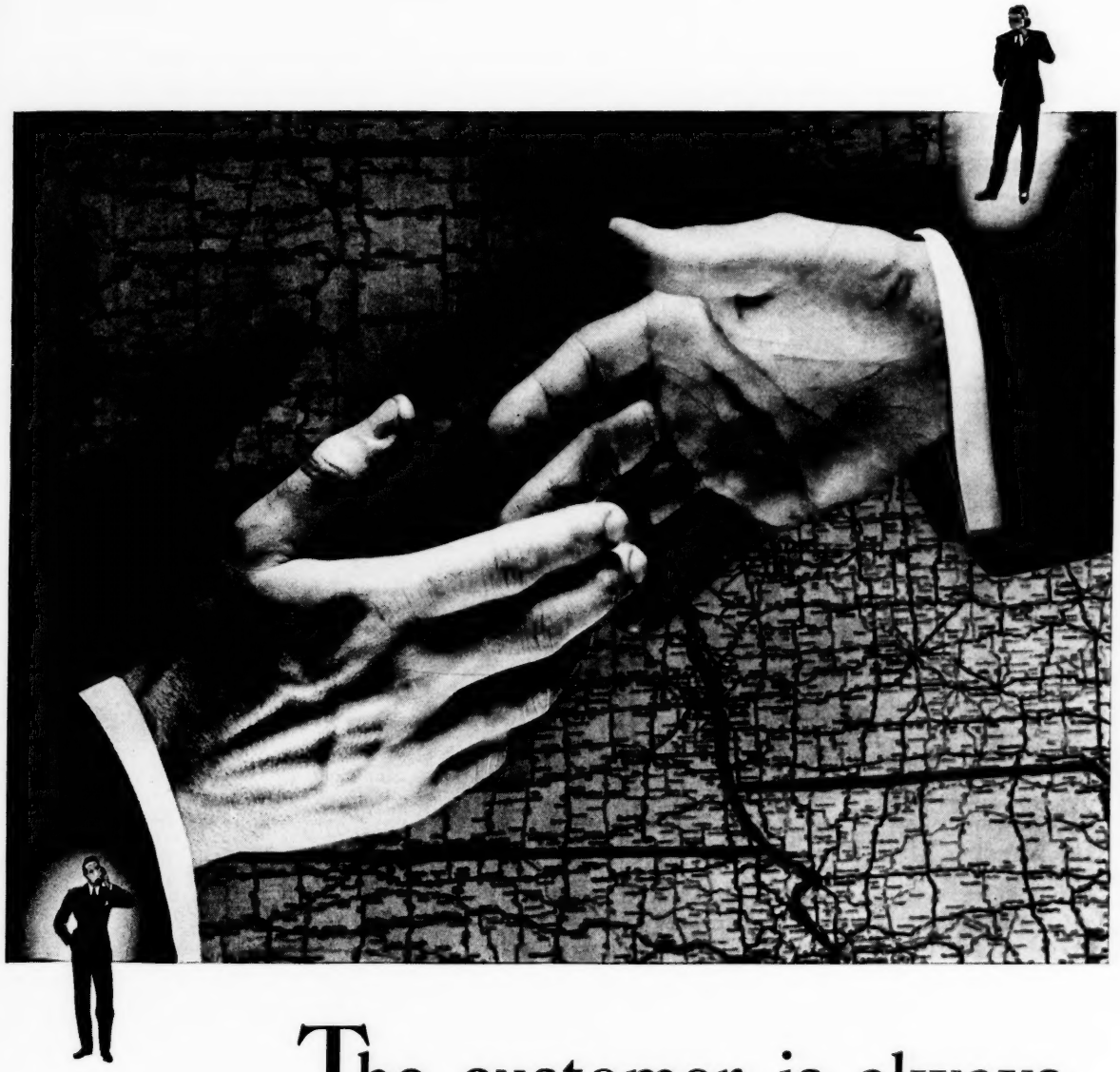
MASS-FLO Elevator and Conveyor

TOWMOTOR Lift-Grip Truck

The construction of an upper "jaw" extending from the top of the mast in the TOWMOTOR Lift Truck, prevents bounding and spillage of light weight goods in many packages while being transported for stacking. This Lift-Grip feature, it is declared, is an economical answer to the problem of handling a variety of bulk goods shipped in boxes, bales and crates. It permits the handling of much larger loads per trip, allows faster travel and does neater, more accurate stacking because pallets can be loaded to the full height of the stack. With more accurate stacking, no helper is required



to aid the operator of the truck on the stacking end of his trips. Another advantage is that the upper jaw or spring tension grip is removable when the truck is needed for handling other types of material. The TOWMOTOR illustrated is shown picking up 24 cases of oranges in one "bite." It travels over rough, uneven flooring without shaking the load of crates out of alignment. When the forks have entered the pallet under the pile of crates, the hydraulic lifting mast is set in motion with a lever at the driver's right hand. The load then moves up until the upper "jaw" with this spring tension grip contacts the top of the pile. With a self-compensating spring tension "pinch," the bite is kept just gentle enough to keep the pile in alignment and prevent spillage while the machine is racing to the piling or storage point. The Lift-Grip truck is manufactured by the Towmotor Company, Cleveland, Ohio.



The customer is always right at hand—*by Long Distance!*

A friendly telephone talk is like a handshake across the miles. It adds *tact* to many kinds of business *contact*.

When you aren't able to visit all your customers as often as you'd like, you can still keep in close touch by Long Distance.

When you travel, it saves *both* your customers' time and your own to telephone ahead for appointments.

When you reach a central city, telephoning the outlying accounts that you can't see every trip often produces orders that might otherwise slip away.

When you learn of a pending price change, it usually pays to pass it along promptly—by telephone.

Such timely, *personal* calls build the good will that builds business.

GREENVILLE, MISSISSIPPI

In the heart of the richest agricultural area in America, is ideally located for the establishment of industries, and branch houses for the distribution of manufactured goods.

Cheap and abundant gas, oil, electricity, and coal.

Located on the Mississippi River, Greenville is directly connected with every large city in the interior by barge line transportation, affording both direct and competitive rates.

Advantageous transportation facilities by Railways, Waterways, Highways

A $4,447,000 bridge crossing the River, now in the course of construction, will open a new gateway to the west.

Good water is plentiful, and labor conditions are ideal.

Average winter temperature 47.6°. Average summer temperature 82.7°.

Having excellent schools, beautiful churches, and well paved streets, Greenville is a delightful city in which to live.

For information, write the

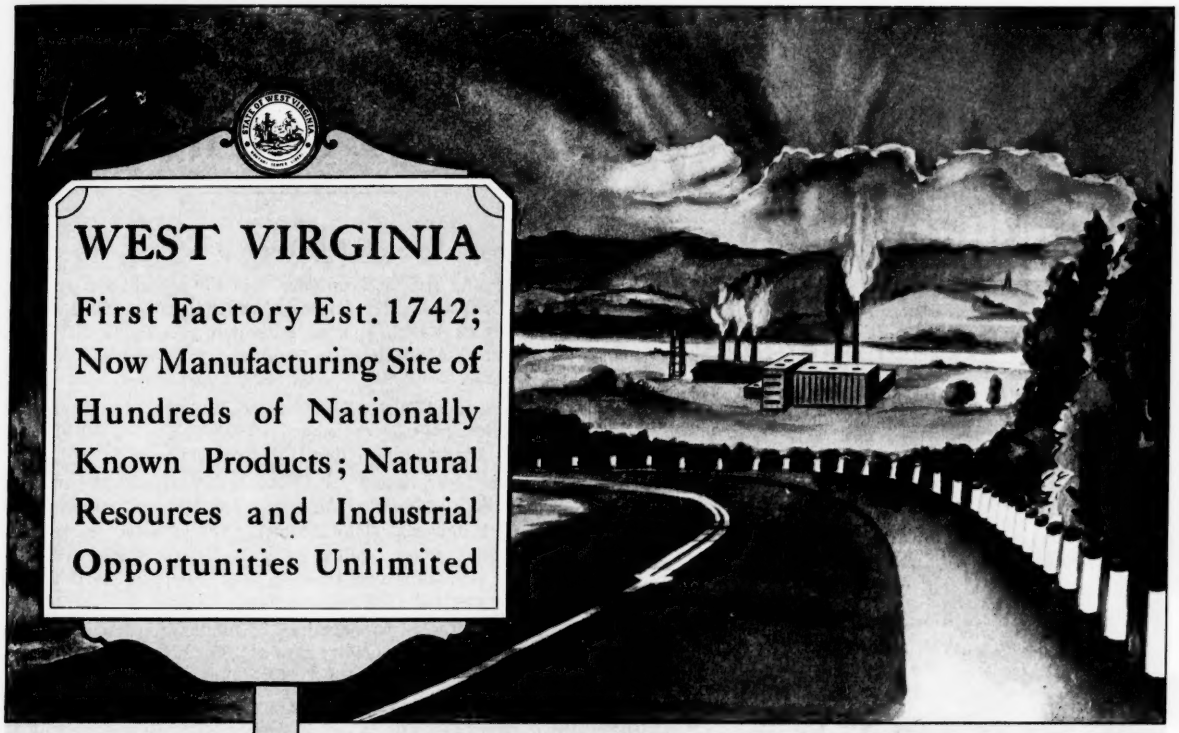
Washington County Chamber of Commerce
Greenville, Mississippi

NATURAL GAS

A fuel whose value has been proven by years of use in a most diversified line of industrial applications.

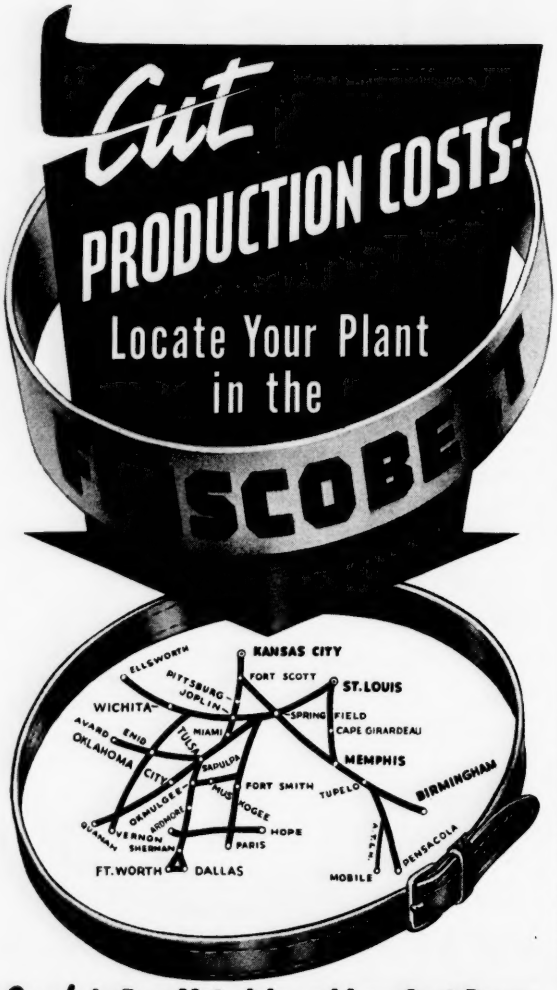
Natural gas has created the possibility of effortless comfort by the facility, and economy with which it fits into the home.

SOUTHERN NATURAL GAS COMPANY
Watts Building **Birmingham, Ala.**



An open road to industrial opportunity awaits Industry in WEST VIRGINIA. Superior Coal, found in 49 of 55 counties, Natural Gas, Petroleum, Salt Brines, Clays, Silica Sand, Limestone, other Minerals, and Timber; ample Labor and Power, nearby Markets, Transportation in every form . . . all of these and more, await those who seek a stable and favored manufacturing region. Industries intent upon expanding or decentralizing, should consider WEST VIRGINIA FIRST! Its geographical location, its resources and opportunities, present an incomparable combination of advantages. Both Private and Public organizations will be found helpfully cooperative . . . Specific and more complete details can be obtained from: The Industrial Development Committee, Capitol Building, Charleston, West Virginia.

West Virginia Publicity Commission



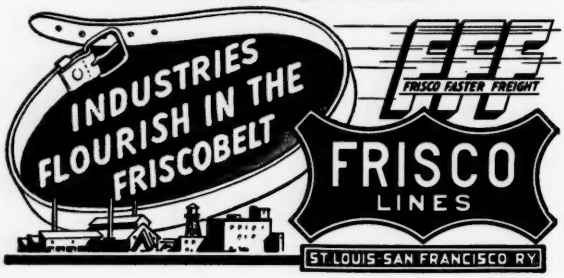
Rich in Raw Materials and Low Cost Power

Here you have a ready market of 16,000,000 able-to-buy consumers...an industrial supply market for the oil industries, petroleum refineries...soap and glass factories...cottonseed oil mills, meat packers, fruit and vegetable canneries...cotton textiles, lumber mills...egg and poultry packers—and their host of related industries. Ready at hand are inexhaustible raw material resources, low cost electric and fuel power, and ample skilled and adaptable labor in this great opportunity area—served by Frisco First.

Industries depending upon agriculture will find, in the Friscobelt, ideal soil and climatic conditions for the production of needful commodities.

Your inquiry is invited. Address—

Industrial Department, Frisco Lines
819 Frisco Bldg., St. Louis, Mo.



FINANCE » » » and « « « INDUSTRY

Safety Records

New Safety records keep pace with the promptness and reliability of present day service of the railroads. The Norfolk and Western Railway as an outstanding example last year surpassed all of its previous high safety and accident prevention records.

In 1938 and 1939 the Norfolk and Western carried a total of 2,286,000 passengers nearly 169,000,000 miles without a single injury or fatality in a train accident.

The employee casualty rate for last year was 3 per cent better than 1938 when the road was awarded the coveted Harriman Memorial Gold Medal for the greatest progress in safety among Class I railroads in the United States, and was a 79 per cent improvement over 1926, when the Norfolk and Western won the Harriman Medal.

A notable record was attained in employee accident prevention in 1939 with a casualty rate of 3.85 per million man-hours worked, as compared with 39.55 in 1912.

From the records of various terminals and divisions of the road, an idea may be gained of the perfection to which accident prevention may attain when the Lambert Point Shop, Norfolk, Va., is cited. 749,488 man-hours were worked in 1939 without a single reportable accident, and this record holds true at that particular point from November 18, 1936, to December 31, 1939.

Unfair Competition

Elsewhere reference is made to the financial report of the 31 government agencies which operate with 1476 subsidiaries in the business of lending taxpayers money. The magnitude of the operation is indicated in some degree by the 64 volumes of the report that took eight months to prepare.

Aside from losses that will add to the Federal debt, perhaps several more billions, the competition that cuts into the business of the banks deserves thought.

Bankers have not had an easy time the last several years. Government sponsored competition that makes no return on capital and gets more when needed to cover losses is impossible to meet in banking as in power and transportation fields.

Financial Report For Employees And Stockholders

Styles change in everything, even in the way that annual reports are gotten up for stockholders. The dry, condensed, statistical style in vogue for many years is now giving way to something elaborate and artistic.

An illustration of this improvement is found in the 1939 annual report of the Caterpillar Tractor Company of Peoria, Illinois. For the third time, this company's report is compiled and prepared for both employees and stockholders; further, this time the president of the company, B. C. Heacock, got on the home-town radio and emphasized the salient points for the benefit, mainly, of the employees residing in central Illinois.

1939 sales, 21% better than 1938, totalled $58,432,921.32. The net profit for 1939 was $6,004,890.37. This was $2.89 per share on the common stock compared with the 1929 all-time high which was $6.16 and which was derived from a sales volume that was $8,000,000 less than the 1939 volume. Em-

(*Continued on page* 46)

We have helped

many businesses that have brought us their financial problems.

Correspondence invited.

BALTIMORE COMMERCIAL BANK

GWYNN CROWTHER, *President*

BALTIMORE, MARYLAND

Member Federal Reserve System
Member Federal Deposit Insurance Corporation

STOP THE RAVAGES OF DRY ROT AND TERMITES

by pressure-treating your lumber and timber with ZMA or Creosote. Eppinger and Russell Co.'s preserving process increases the life of woods from 8 to 20 times. For more than half a century, the outstanding utilities and industrial plants have depended upon Eppinger and Russell Co. for long-life, low-maintenance lumber that is immune to decay, dry rot and termite attack.

PRESSURE-TREATING PLANTS AT:
Jacksonville, Fla.,
and
Long Island City, N. Y.

WOOD PRESERVERS SINCE 1878
EPPINGER AND RUSSELL CO.
84 Eighth Ave., New York City

CRUSHED STONE

Only highest grades of crushed
LIMESTONE AND GRANITE
Meeting all specifications

CAPACITY—8000 tons daily

Blue Ridge, Va. Pembroke, Va. Pounding Mill, Va.
Boxley, Greensville County, Va.

W. W. BOXLEY & COMPANY
Boxley Building, ROANOKE, VA.

DRAWING MATERIALS

Drawing Instruments, Slide Rules, Planimeters, Drawing and Tracing Papers, Drafting Room Furniture, Surveying Instruments, Tapes.

PIGMENT Waterproof Drawing Ink

Catalogue sent on request.
Inquiries solicited.

F. WEBER CO. 227 PARK AVENUE
Est. 1853 BALTIMORE, MD.

MOUNT AIRY GRANITE

THE NORTH CAROLINA GRANITE CORP'N.
Mount Airy, N. C.

MORTGAGE MONEY —IN AMOUNTS OVER $100,000

If you contemplate new factory construction or the expansion of your present plant, we have money to lend in amounts over $100,000.

GUY T. O. HOLLYDAY
628 MUNSEY BUILDING
BALTIMORE, MARYLAND
PLaza 0676

NEW *Sewer and Culvert Construction*

By making concrete pipe on the job with Quinn Forms you give more men more work, can use less experienced labor and produce uniform concrete pipe of highest quality. Recognized standard of all concrete pipe.

QUINN PIPE FORMS

Quinn Heavy Duty and Medium Duty Pipe Forms best for hand or wet process pipe. Give more years of service. All diameters—12 to 84 inches. Tongue and groove or bell end pipe, any length.

WRITE for New Book on Concrete Pipe giving information and prices, valuable tables on production costs, strength tests, Pipe Forms, Pipe Machines, etc. Book sent free.

QUINN WIRE & IRON WORKS 1605 12 St. Boone, Iowa

Pensacola Invites Industry

Pensacola has what industry wants—good port facilities, marine terminals for the L & N R.R. and the Frisco Lines, nearby raw materials, good labor and living conditions, low costs of operation. Investigate Pensacola. For further information write
B. F. Langford, Sec. Mgr., Municipal Advertising Board—

PENSACOLA FLORIDA *on the Gulf*

DISTINCTION

Pension plans have been arranged by The Prudential for the employees of some of America's foremost business enterprises.

Wise executives, men of international prominence, have selected The Prudential to install these retirement plans because they were convinced it would mean:—

STABILITY — LOW COST — SAFETY

The same service is available to you.

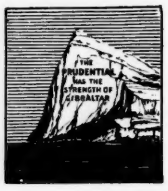
Address

Group Annuity Consultation Service

The Prudential Insurance Company of America

Home Office, **NEWARK, N. J.**

Home Office
Newark
New Jersey



Chicago Office
1742 Bankers Bldg.
105 W. Adams St.

A convenient digest of the Social Security Act (1939) is available upon request.

Finance *and* Industry

(*Continued from page* 44)

Financial Report For Employees And Stockholders

ployees today (11,500) are more than double those of a decade ago.

The 1939 report is printed very attractively in colors, and besides the usual statements and a unique introduction is interspersed with charts and interesting views of Caterpillar equipment at work.

How Is It Figured?

Secretary of Agriculture, Henry A. Wallace, is quoted as saying a "decent" farm house can be built in the South for "less than $1500"—and could be amortized over a forty-nine year period at about $60 a year.

He announced the Farm Security Administration from five years experience can do it and has let a contract for 2000 such houses at an average cost of $1313, including profits to contractors and material men.

What rate of interest and what payments on principal are you figuring on Mr. Secretary?

How much for repairs and depreciation to have a "decent" house after forty-nine years?

Railway Revenues Improve

Total operating revenues are reported by the Seaboard Railway for January 1940 as being an increase of more than 13% above January a year ago. Freight revenues increased more than 12%. Net railway operating income was $538,310.

Class I railroads of the United States for the year 1939, it is reported, had a net income of more than $94,000,000 as compared with a net deficit of more than $121,000,000 in 1938.

Construction—A Promising Field

Commentators agree there will not be a prolonged decline in business activity but rather that the figures of the indexes will show improvement before long.

Construction which has lagged for years in private building, especially of homes, will prove a spur to business in many lines if and when it becomes active.

High wage costs in the building field and the restraint of trade tactics of certain local unions now being investigated are tending to hold it back. With money plentiful and cheap it would appear the removal of this obstacle will open a promising field for investors as well as increased employment of the idle.

Venture Money

As the MANUFACTURERS RECORD has repeatedly pointed out, there is a vast supply of private capital seeking profitable investment. At the present time, excess reserves of the country's banks amount to over $6,000,000,000, and private savings have been invested in insurance to such an extent that the Government has become "alarmed" at the size of life insurance companies' control of the country's assets.

The Temporary National Economic Committee has intimated that the vast investment of private savings in insurance has had the effect of drying up venture capital. It doesn't work that way. Venture capital has not dried up. It is merely waiting for profitable opportunities for investment, and the New Deal has gone far in reducing those chances for profit through reform and regulatory legislation, as well as exorbitantly increasing the cost of government. Unless there is reasonable chance for profit, capital won't venture.

"Gimme A WINDOW"

With tears in his beady eyes the department-store buyer pleads with his merchandise manager for window space.

$ $ $ "Sure, I gotta have the ad," he says, "but gimme a window for a tie-in; I'll sell twice as much."

$ $ $ In selling to high executives—new construction, machinery, transportation, raw materials, bank service, insurance, etc.—the principle is the same. But Point of Sale is *the executive's desk.*

$ $ $ Here secretary, phone and buzzer are handy. Here associates can be conveniently consulted.

$ $ $ The one merchandising medium, the one "*window,*" is The Wall Street Journal. 86 per cent of its circulation is read by executives at their desks.

$ $ $ It gives you, per advertising dollar, more readers who are active management-executives of industrial corporations with assets of over $1,000,000 than any other publication—*magazine or newspaper.*

$ $ $ You can step up the success of your messages in other executive publications—by letting The Wall Street Journal merchandise for you.

INDUSTRIAL NEWS

Koppers Opens Southwest Office

Koppers Company, Engineering and Construction Division, Pittsburgh, Pa., has opened a branch office in the National Bank of Tulsa Building, Tulsa, Okla., to serve the oil and gas industries in the Southwest, according to Joseph Becker, vice president. W. A. Leech, Jr., who has been engaged for a number of years in research, plant construction and operation for the company, is in charge of the office. Koppers builds plants for the removal of hydrogen sulfide and moisture from natural and refinery gases, distillation equipment, and general gas and refinery plant construction. It also manufactures piston rings, shaft couplings, valves, bronze and iron castings, tanks, platework, special machinery, time cycle controls, pressure treated timber, roofing, waterproofing and paving.

Cutler-Hammer Branch Office

Cutler-Hammer, Inc., Milwaukee, Wis., manufacturers of electrical control apparatus, announce the appointment of E. K. Anderson as manager of the company's branch office at 624 Santa Fe Building, Dallas, Tex. This office serves the states of Arkansas, Oklahoma, Texas and the southern part of New Mexico. It is under the direct supervision of G. E. Booth, District Manager, St. Louis, Mo. Mr. Anderson has been with the company a number of years and has wide experience in all phases of electric lighting and power applications, a field in which he has done outstanding work. He has a thorough knowledge of the application of Cutler-Hammer Motor Control, Multi-Breakers, Safety Switches, Service Control and other electrical equipment manufactured by the company.

Harold Sands Falk Heads Falk Corporation

The Falk Corporation, Milwaukee, Wis., internationally known for its gears, couplings, marine drives, steel castings, and other industrial products, announces that Herman W. Falk, founder and president of the company, now becomes chairman of the board and is succeeded as president by Harold S. Falk. The latter was born in Milwaukee and graduated from the University of Wisconsin, College of Engineering, in 1906. He entered the permanent employ of the company after graduation, becoming assistant to the superintendent. During the period from 1906 to 1920 he was employed in various departments of the plant, and in 1920 was appointed vice president and works manager, occupying these positions up to the time of his appointment as president.

New Cementstone Company Plant

For the large scale production of prefabricated concrete building units by new principles of manufacture, a new plant is being built in Pittsburgh, Pa., by The Cementstone Company, according to L. M. Johnston, president, who states that the wide acceptance of Cementstone products has necessitated removal to a location with sufficient acreage for expansion. New buildings are to be erected and equipped with the company's patented machinery, which employs vibration, heat and rapid cycles of manufacture to produce building shapes of more uniform appearance and greater weatherability and strength. In addition to manufacturing its products, which will be marked with the trade name "Cementstone," the company has formed its own sales organization. Blocks for wall structures, lintels, used for wall structure supports over doors and windows, and slabs for floor and roof construction are the first products of the new plant, but it is planned to expand its operations to include the manufteture of every type of building element where concrete can provide superior and more economical construction.

David B. Knowlton

The Virginia Steel Company, Inc., Richmond, Va., announces the death on Friday, February 2, of David B. Knowlton, branch manager of the company at Birmingham, Ala.

Cooper-Bessemer Opens St. Louis Office

The Cooper-Bessemer Corporation of Mt. Vernon, Ohio, has established sales offices on the fifteenth floor of the Arcade Building, Eighth and Olive Streets, St. Louis, Mo., and has engaged W. S. Arthur to manage sales engineering activities in the districts served by the new branch. In this position he will further sales of the company's gas engines, compressor units and Diesel engines, covering a range of 25 to 1500 horsepower and including horizontal and vertical engines, and horizontal, vertical, angle, and V-angle compressor units. Territory covered by the St. Louis branch will include the larger part of Missouri, southern Illinois, northeastern Arkansas, and Mississippi as far south as Greenville. Mr. Arthur has had extensive experience in the machinery building and sales fields, having entered the heavy machinery industry in 1916. His most recent connection has been with the Superior Engine Company, as manager of that company's Chicago office.

Modernizing Milwaukee Works

Plans have been made by the International Harvester Company for a program of rehabilitation, rearrangement, and modernization of the company's Milwaukee works, at a cost of $3,000,000, according to E. J. Leiser, superintendent of the Milwaukee plant. The new program to extend over a period of 18 months, includes a complete rehabilitation of the foundry for specialization in the manufacture of large castings, and laying out of considerable factory space preparatory to the manufacture of two new Diesel engines. The proposed changes will necessitate the removal of the company's cream separator and milking machine manufacturing activities from the Milwaukee works, but practically all press work on these machines will be retained there. Plans for the improvements fit in with the company's long range program to develop Milwaukee works as a large Diesel engine and tractor manufacturing plant. The program does not include any additional factory building construction.

NEW IMPROVED DRIVE SHAFT BEARING

MAKES STERLING DEEP WELL PUMPS MORE TROUBLE FREE THAN EVER!

Note: NO RIGID SPIDERS

CLOSE-UP of section cut away to show cadmium-plated steel bearing with sintered, graphited liners in place.

OF cadmium-plated steel shells, with sintered, graphited liners, these new Sterling Drive Shaft Bearings retain the full tensile strength of the all-bronze bearing plus the added advantage of being lined with the *best possible bearing material.*

And because it is now "steel to steel" in Sterling Pumps, you no longer need to fear the galvanic action between bronze and steel at shaft-enclosing tube joints.

Extra security against scored bearing is another advantage, because the graphited material will run for many hours *without any other lubrication!*

For further information write, wire or telephone "Pump Headquarters" at once!

STERLING PUMP CORP., Hamilton, O., Stockton, Cal.

Service (if you need it) From Coast to Coast

PRECISION BUILT

STERLING

DEEP WELL TURBINE PUMPS

WRITE FOR CATALOG TODAY!

Sterling DEEP WELL TURBINE PUMPS

There are also Sterling Vertical Centrifugal Pumps, Sterling Sump Pumps, Sterling Propeller and Mixed Flow Pumps, and Sterling Jet Pumps—Precision Built — Yet Cost No More!

The Arundel Corporation

BALTIMORE, MD.

Constructors and Engineers

Distributors of Sand - Gravel - Stone and Commercial Slag

A COMPLETE ORGANIZATION

Our complete organization with years of experience in successfully executing large construction contracts of various kinds is prepared to undertake the construction of earth, masonry and concrete dams, drydocks, dredging of all kinds, river and harbor improvements, deepening channels, hydraulic filling and rock work, tunnels, railroad construction, sewers and waterways.

PERSONNEL:

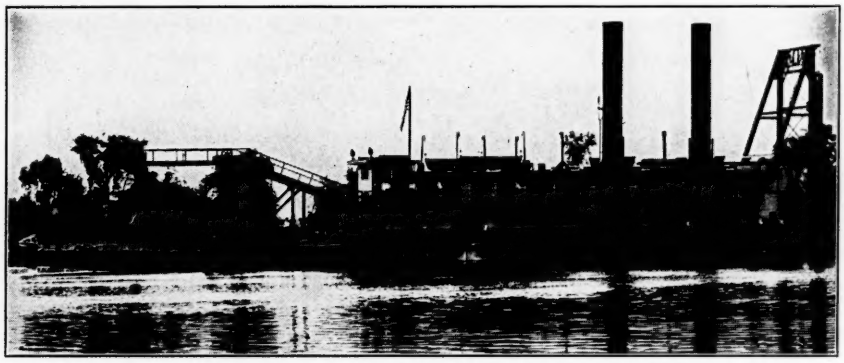
JOSEPH V. HOGAN, President
W. BLADEN LOWNDES, Vice-President
RICHARD A. FROEHLINGER, Secy. & Treas.
E. L. WADE, Assistant Secretary
J. N. SEIFERT, Asst. Secy. & Asst. Treas.
C. W. BLACK, Chief Engineer
HOWARD O. FIROR, General Supt.

MAIN OFFICE: Arundel Building, Pier 2, Pratt Street
BALTIMORE, MD.

Branches: BROOKLYN, N. Y.—MIAMI, FLA.

DREDGING

FILLING, LAND RECLAMATION, CANALS, PORT WORKS
RIVER AND HARBOR IMPROVEMENTS—DEEP WATERWAYS AND SHIP CHANNELS



We are especially equipped to execute all kinds of dredging, reclamation and port works in Southern waters.
Correspondence invited from corporate and private interests everywhere.

Contractors to the Federal Government

ATLANTIC GULF AND PACIFIC CO.

NEW YORK: 15 Park Row HOUSTON, TEXAS: Scanlan Building

TRADE LITERATURE

BROKEN FLOORS—
Folder—"Don't Cry Over Spilt Milk—Fix The Floor," illustrated, showing how money may be saved by repairing broken floors with CONCRETDENSE.
Flexrock Company, Philadelphia, Pa.

LEATHER BELT—
Booklet—illustrating and describing Duplex Link Leather belt, a new product, with price list and tables.
Alexander Brothers, Philadelphia, Pa., Southern office at Charlotte, N. C.

WELDED CHAINS—
Catalog No. 365—new edition, devoted to welded chains, a feature being a 2-color, 16-page insert devoted to ACCO Registered Sling Chains and covering the END-WELDUR Chains, a new development in the welded chain line; Iron Crane Chain, in both H. B. and Ajax grades, are also included.
American Chain Division, American Chain & Cable Company, Inc., Bridgeport, Conn.

HAZARD WIRE ROPE—
Folder-Pamphlet—"Hazard Lay-Set Preformed Wire Lines," illustrated, designed to aid in choosing wire rope of the construction, grade and type that will give the best cost record per job or unit of work on equipment for building and maintaining roads and streets; publication also presents table of recommendations; of 77 lines recommended in the booklet, 66 are of 6-strand construction.
Hazard Wire Rope Division, American Chain & Cable Company, Inc., Wilkes-Barre, Pa.

SUPERHEATERS—
Catalog—"Elesco Superheaters," 24 pages, illustrated, presenting details of construction of both the ball-joint and the welded types of Elesco Superheaters, with numerous diagrams showing various arrangements for application to different types of boilers and to meet different conditions; control of superheat by means of bypass dampers is explained; catalog is confined to stationary practice for a wide range in pressures and temperatures.
Combustion Engineering Company, Inc., New York City.

STEEL PRODUCTS—
Stock List and Reference Book—254 pages, 1940 edition of the "Scully Stock List and Reference Book," bringing information in earlier editions up to date and presenting new data; designed as a guide to steel purchases and to many activities involving steel products; presenting a series of reference tables to supplement the usual listings of Scully products.
Scully Steel Products Company, Chicago, Ill.

WATERPROOF COATING—
Literature—devoted to Ranetite No. V Clear Waterproof Coating.
Ranetite Manufacturing Company, St. Louis, Mo.

DRIVE CHAINS—
Catalog 725—illustrating and describing Jeffrey drive chains for every type of service.
The Jeffrey Manufacturing Company, Columbus, Ohio.

CONVEYOR IN INDUSTRY—
Book No. 1700—"Link-Belt Conveyors in American Industry," in three colors—red, white and blue—showing many different applications of mechanical elevating and conveying equipment for handling both packages and bulk materials; presenting several pages of statistics, with interesting and informative reading matter.
Link-Belt Company, Chicago, Ill.

PUSH BUTTON CONTROL—
Bulletin No. 129—illustrating and describing the Shepard Niles 5 Speed Push Button Control and the Shepard Niles Single Speed Push Button Control for the operation of electric cranes and hoists.
Shepard Niles Crane & Hoist Corporation, Montour Falls, N. Y.

STOCK GEARS—
Catalog 110—256 pages, covering Brad Foote stock gears, reducers, cog belts, sprockets, bearings, pulleys, chain, etc.; also presents engineering section with trig tables and other valuable information.
Brad Foote Gear Works, Cicero, Ill.

HOSE IN INDUSTRY—
Booklet—"Hose Hints," illustrated, designed to aid prospective buyers and present users of hose manufactured by the U. S. Rubber Co. to intelligently select the proper hose for their needs.
U. S. Rubber Company, 48th Street and Sixth Avenue, New York City.

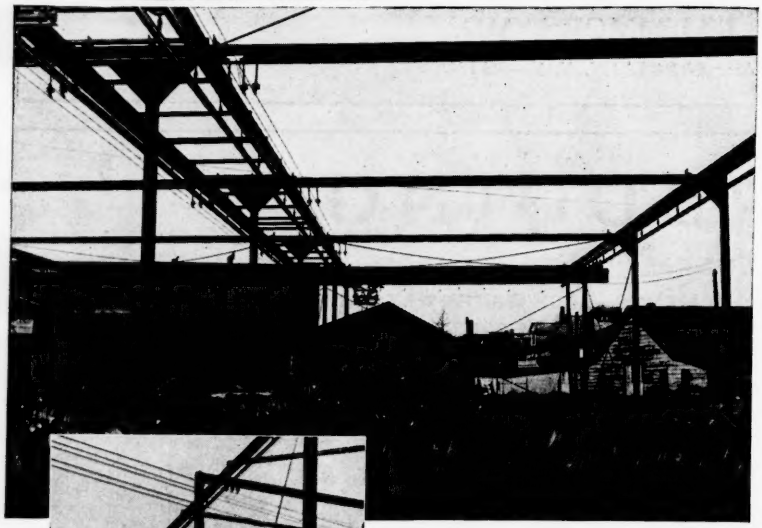
PUMPING EQUIPMENT—
Bulletins—By including complete selection tables, typical specifications, principal dimensions and other engineering information in recent bulletins, Fairbanks-Morse have simplified the problems of the engineer selecting pumping equipment. Recent bulletins prepared in this way are:
Bulletin 5550C—on Builtogether pumps;
Bulletins 5810D and 4874A—single stage split case centrifugal pumps;
Bulletin 5520P—side suction centrifugal pumps;
Bulletin 5972—two-stage centrifugal pumps;
Bulletin 5410C—sewage and trash pumps;
Bulletin 5430—close coupled sewage and trash pumps.
Fairbanks, Morse & Co., Chicago, Ill.

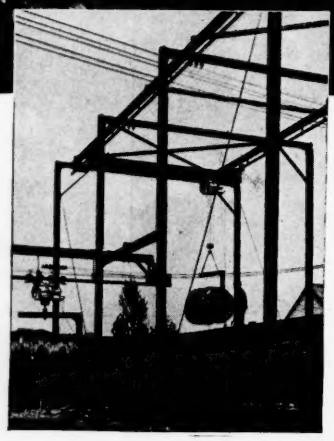
NEW PUBLICATION
"Today's Business"—Under this caption, the first edition of a publication appeared in February, whose purpose it is to "digest the cream of the business news from leading trade, financial and business magazines," according to Harvey B. Matthews, Jr., president of Today's Business Publishing Corporation, 155 West 46th Street, New York. Today's Business is published monthly, the subscription price being $3.00 annually or 25 cents per copy.

SOUND CONTROL—
Brochure, Form AC-26A—"Sound Control," illustrated, presenting specific information on the practical applications of sound control materials in a wide variety of locations; describes two new features—Sanacoustic ventilated ceilings, which are said to proved draftless ventilation and absorb duct noises as well as reduce room noise, and the Sanacoustic noise-quieting ceiling construction for use with flourescent lighting; also describes Permacoustic and Spongecoustic, two new materials with textured surfaces designed for decorative acoustical treatments.
Johns-Manville, New York, N. Y.

INDUSTRIAL LOCKERS—
Folder—illustrated, stressing the value of safe and efficient lockers to industry, making it possible for workmen to wear good clothes to work when desirable, with the

"Saves 32c per ton!" in handling cost - - -





Unloading and storing coiled rod from box cars formerly cost 40c per ton and required 5500 sq. ft. of warehouse space.

Now, raw coils are unloaded from gondolas, stored outside and handled through pickling to punches and cold-headers at 8c per ton.

A Clear Saving of 32c per Ton Made Possible by Overhead Handling

Innovations, such as a turntable for transferring coils between hoists, develop in conference with American MonoRail engineers.

AMERICAN MONORAIL CO.
13109 Athens Ave., Cleveland, Ohio

assurance that lockers in the plant will protect them; offers information as a guide to the selection of suitable steel lockers, and showing typical installations in a number of plants.
Durabilt Steel Locker Company, 436 Arnold Avenue, Aurora, Ill.

CEMENT WATERPROOFING—
Booklet—devoted to Ranetite VVV Cement Waterproofing; also circular on Ranetite Cement Bonding Compound, both used in conjunction for waterproofing leaky basements, pits, dams, etc.
Ranetite Manufacturing Company, Inc., 1917 South Broadway, St. Louis, Mo.

LEATHER PACKINGS—
Alexander Brothers, 406 North Third St., Catalogue No. A-49—illustrating and describing Alexander industrial packings. Philadelphia, Pa.

LIFT PUMPS—
Bulletin No. 30—illustrating and describing the Pomona Little Chief All Service Pump.
Pomona Pump Company, Pomona, Calif.

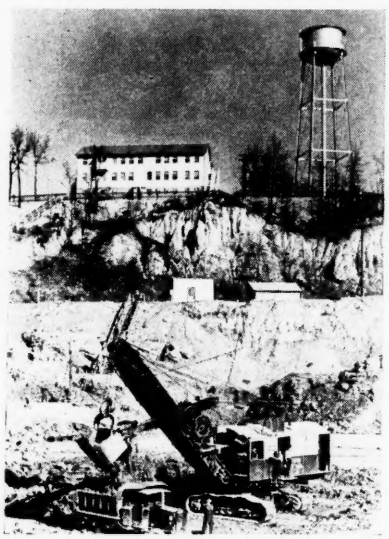
WATER CONDITIONING—
Bulletin No. 2233—devoted to Permutit Electro Chemical Feed, claimed to be accurate and reliable for apportioning chemicals in wet form at a constant or variable rate.
The Permutit Company, New York, N. Y.

MAINTAINING FURNACE WALLS AND ARCHES—
Bulletin—devoted to an analytical study of the maintenance cost of furnace walls and arches.
Geo. P. Reintjes Co., 2517-19 Jefferson Street, Kansas City, Mo.

SPREADEROLLER—
Bulletin No. 800—illustrating and describing the Universal Spreaderoller, showing how it applies seal cost to freshly oiled roads and streets, applying the large material first; medium, next, and the fines on top, rolling them smooth after depositing them and providing a white-topped, skid-proof surface.
Universal Crusher Co., Cedar Rapids, Iowa.

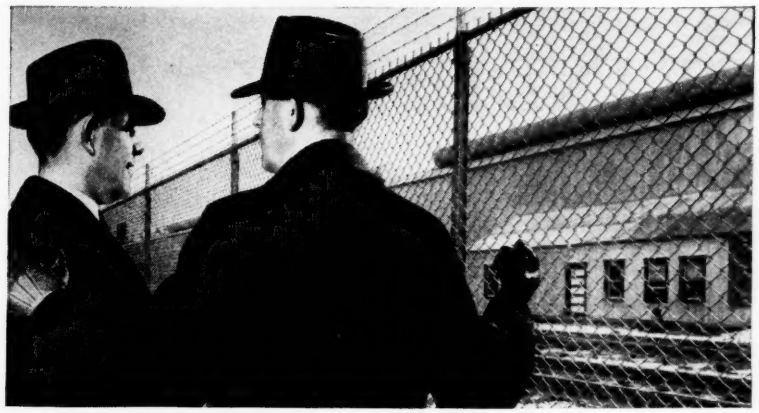
Tanks at Gilbertsville Dam

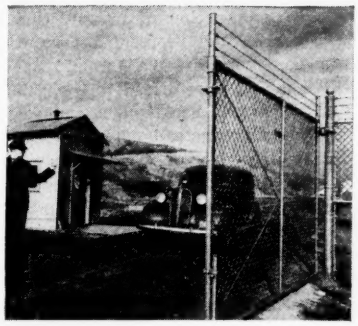
For providing a water supply at the site of the Gilbertsville dam and village in Kentucky, one of the developments of Tennessee Valley Authority, the Chicago Bridge and Iron Company of Chicago, Illinois, furnished elevated water tanks,

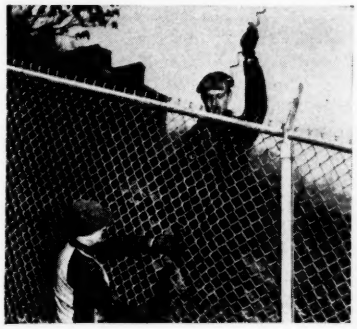


one of which is illustrated herewith, the view being taken at the dam. The company erected a 100,000-gallon elevated tank 102 feet, 10 inches to the bottom at Gilbertsville village, and a second 100,000-gallon ellipsoidal bottom elevated tank 102 feet, 10 inches to bottom, adjacent to the dam site. The latter tank is illustrated herewith.

Why most plant owners choose Cyclone Fence







MOST buyers usually look beyond first cost and new appearance when ordering equipment as important as fence. Cyclone scores because it has proven its ability to give years and years of trustworthy protection with practically no upkeep cost.

Cyclone Gates are good examples of Cyclone quality. They swing on sturdy ball and socket hinges. The gate frames are so sturdily constructed that warping and sagging are eliminated.

Watch a Cyclone erection crew. You'll notice that these trained men set every post in a concrete base so designed that frost won't budge it. They put expansion joints in all horizontal rails. They stretch the fabric tight and provide extra bracing to corners where the pull is severe. They know their job.

Fence isn't something you buy every day. So get all the facts before you decide. Just drop a line to Cyclone. We'll send you a book that contains a lot of valuable information on fence. And on a word from you we will send an engineer who will help you choose the right fence for your plant. No obligation, of course.

CYCLONE FENCE COMPANY
General Offices: Waukegan, Ill.
Branches in Principal Cities
Standard Fence Company, Oakland, Calif., *Pacific Coast Division*
United States Steel Export Company, New York

CYCLONE FENCE CO., DEPT. 830
Waukegan, Ill.

Please mail me, without obligation, copy of "Your Fence—How to Choose It—How to Use It." I am interested in fencing: ☐ Industrial Property; ☐ Playground; ☐ Residence; ☐ Estate; ☐ School. Approximately.....feet.

Name.....

Address.....

City.....

State.....

FREE!
32-Page Book on Fence

All the facts you want to know about fence. 14 kinds illustrated. This book will help you choose the right fence for your property—business, school or home. Whether you need just a few feet of fence or miles of it, see what Cyclone has to offer. Mail the coupon, today.

USS CYCLONE FENCE
UNITED STATES STEEL

QUIETING THE NERVES IN THE SINEWS OF INDUSTRY

BY
F. L. Spangler, M. E.

YOU can't foretell how a wire rope is going to behave by looking at it. But one thing you can do—you can specify the kind of nervous system the rope is to have. Is it to have quiet nerves, and be docile and easy to manage? Or is it to be of the "nervous" type and be rebellious and obstinate?

Prior to 1924, all wire ropes were obstinate when new, and could be tamed only by use. They didn't spool straight; given a little slack they threw themselves into loops, from which often resulted disastrous kinks, they would twist and squirm as they worked over sheaves; if the ends weren't seized the strands and wires flew out and scattered in every direction.

In 1924 a method was developed for breaking ropes in during the manufacturing operation, so they did not have to operate for months over sheaves and drums before losing their "crankiness." Even when new they reeved easily; broken ends of wires did not stick out from the rope to lacerate men's hands, unseized ends did not fray or ravel, the rope lay straight as a whip and was considerably more flexible than the old kind of rope.

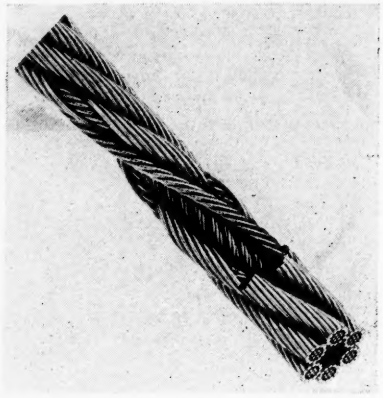
The new kind of rope was given the name "preformed," and henceforth the old type of rope was known as "nonpreformed." The two kinds of rope look alike, but the difference is one of "nerves." In the non-preformed rope, the wires and strands were tense, made so by forcing them around the rope center in the closing operation of manufacturing the rope. In the preformed rope, the strands and wires are in a state of "ease"; the strands are preformed to their final spiral shape and are then assembled to form the rope instead of being forced into position. Hence, when the rope is cut, the strands continue to maintain their spiral shape, and the rope ends do not fray out and seizings are not required.

Non-preformed rope is a stressed rope. The stressed wires bind on each other, and the rope does "give" and flex to meet load conditions as does preformed rope. When subjected to tension, it tends to untwist, thereby producing torsional stresses in the rope, which causes it to kink. The binding of the wires against one another reduces flexibility and makes the rope "springy," which promotes whipping and vibration.

In preformed rope, the locked-up stresses are negligible. Each strand acts independently of the other wires in the same strand, since all internal stresses have been relieved at the time of manufacture. Preformed wire rope lies limp much as a manilla rope. Subjected to tension, the strands merely close tightly onto the core without tendency to uncoil, and hence no torsional stresses are produced by loading. Each wire is able to take its full share of the load and to adjust itself to conditions imposed by flexing over sheaves and drums. Not being "springy," this rope quickly dampens vibration and whipping.

How does all of this benefit industry?

Some of the benefits, such as the elimination of need for seizing the rope ends, have already been mentioned. But the greatest benefit is the added service life that preforming has given working ropes. This extension of life is attributable to the slower fatiguing rate of preformed rope.



In this section of preformed wire rope the core is an independent wire rope instead of the usual hemp.

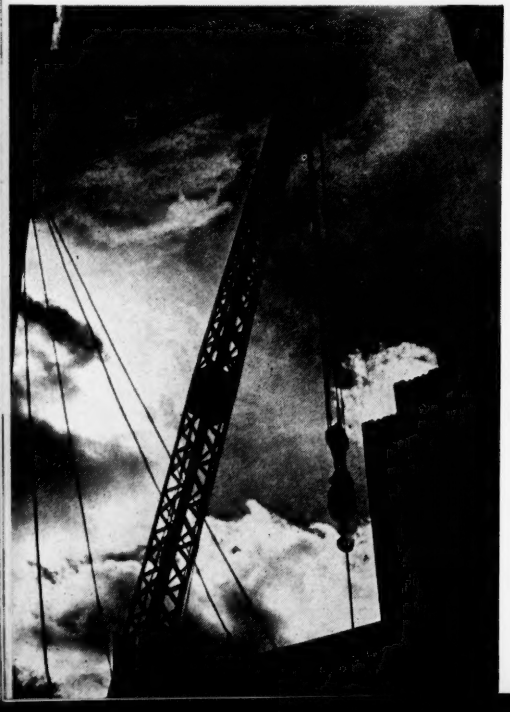
When ropes work over drums and sheaves, final discarding of the rope is generally due to fatigue and not to wear and tear on the rope. A small steel wire that you can't pull in two is readily broken by grasping it between the forefinger and thumb of each hand and flexing it back and forth. This produces a fatigue break. When ropes flex back and forth as they pass over sheaves, we have a similar action. The greater the amount of flexure, the sooner the wire breaks, and the faster the flexing and unflexing the sooner the break occurs.

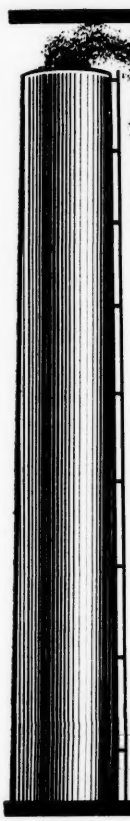
When wire rope flexes and unflexes, fatigue makes its appearance in the form of breaks in the outside, or crown, wires. The smaller the sheave or drum, the greater is the bend in the rope, and therefore the sooner wire breaks occur. Also, the more frequently the rope operates over sheaves, the sooner fatigue appears. When rope vibrates or whips, flexure may occur several times a second, and the stresses are apt to be concentrated at the end of the rope where it enters a socket or is attached to clip fastenings. Hence, vibration or whipping is very destructive to ropes.

The lock-up stresses in non-preformed rope increase the total stress in the wires, and hence accelerate fatigue. Preformed rope, having little or no internal stresses, and having a more uniform distribution of the load between the various elements of the rope, is not so subject to fatigue. Because of its resistance to fatigue, preformed ropes invariably outlast non-preformed ropes by a wide margin.

Hence, the preforming process, by eliminating the "nervousness" in wire rope, has produced a more amiable, less cantankerous product, and in doing so has increased the service being derived

(*Continued on page* 62)





SMOKE STACKS

Another Cole Product

Our various fabricated COLE steel products also include Smokestacks and Standpipes and you'll find them to stack up to your needs in every way. These stacks made to specification from your designs or ours, which our Engineering Department will gladly furnish. Put your Stack—also stack of problems—up to us.

OTHER COLE PRODUCTS ARE:

Tanks and Towers
Bins and vats
Kettles and Kiers
Boilers and Engines
Air Receivers
Nickel-clad and Stainless Steel Vessels
Welded Steel Pipe
Heavy pressure vessels
Fabricated framework

Write for "Tank Talk"—No. 9-D.

Tank Builders For Over 80 Years!

R.D. COLE MFG.CO.
NEWNAN ··· GEORGIA

LANCASTER TANKS

Elevated Tanks
Pressure Tanks
Steel Storage Tanks
Process Tanks
Butane—Propane Tanks
Standpipes
Retorts
Bins
Extractors
Barges
Dredge Pipe and Accessories
Welded Pipe
Riveted Pipe

General Steel Plate Construction designed for your requirements.

Lancaster Iron Works Inc.
Lancaster, Pa.

SOUTHLAND PRODUCTS

—WELDED OR RIVETED—

We now manufacture and offer to the trade tanks in all sizes for pressure or gravity work. Also other steel equipment of either

WELDED OR RIVETED CONSTRUCTION

This applies to field as well as shop built equipment

Write us for information and quotations

Chattanooga Boiler & Tank Co.
CHATTANOOGA, TENN.
TANKS

TANK HEADS

ALL STYLES TO 60" DIAMETER ONE OR A CARLOAD

Catalog on request

THE COMMERCIAL SHEARING & STAMPING CO.
YOUNGSTOWN, OHIO

CREOSOTED TIES, PILING, POLES, POSTS, CROSS ARMS, and LUMBER

WOLMANIZED LUMBER—
Decay and Termite Proof—Can Be Painted

Docks for Ocean Vessels

American Creosote Works, Inc.
New Orleans, La.

Atlantic Creosoting Co., Inc.
Norfolk, Virginia

Plants at: New Orleans; Winnfield, La.; Louisville, Miss. Savannah, Ga.; Jackson, Tenn., and Norfolk, Va.

UNBEATABLE

DAVIS CYPRESS TANKS

COMBINATION

Nature made cypress and we made our 50 years' experience. You can't beat that combination. Plants old and new, are finding this to be true. Send us your inquiries for wood pipe. Let us send you our catalogue.

G. M. DAVIS & SON
P. O. Box 5, Palatka, Florida

DAVIS CYPRESS TANKS

Incorporated Bureaucracy

(*Continued from page* 25)

and the United States Civil Service Commission.

"The ownership of the stock of all corporations should be vested in the Secretary of the Treasury on behalf of the United States," he believes. "The Congress should prescribe the powers and duties of the Secretary of the Treasury in connection with the ownership of such stock."

He says he does not contemplate "that the Secretary of the Treasury would have any voice in the internal management of such corporations except as to the issuance or sale of obligations or securities."

In his opinion the Secretary of the Treasury, as a stockholder on behalf of the United States, "should be authorized to require periodic appraisals of the assets and liabilities. Provision should be made also for periodic external post-audits of each corporation's financial accounts and records. Such audits should be made by or under the direction of the Comptroller General of the United States at the Corporation's place of business and as nearly as practicable in accordance with recognized accounting practices."

The Secretary observed that "Consideration should be given to the question as to whether appointments of administrative employees of Governmental corporations should not be made in accordance with civil service laws, rules and regulations."

He recommended "consideration * * * of a uniform policy with respect to payment of dividends or otherwise reimbursing the Federal Treasury for the use of public money" and suggested that provisions might be made whereby the Secretary of the Treasury could "whenever necessary, arrange for setting up in separate accounts funds made available by Congress for capital purposes."

It would not be exaggeration to say there has never been such a labyrinth of hybrid governmental entities as there exists in the American government today. Incorporated bureaucracy is something engaging, indeed.

The Secretary of the Treasury asserts "the use of the corporate form of organization for transaction of public business of a commercial character is a subject which is receiving more and more public attention."

Certainly, that is as it should be!

Wanted—A Business Pilot

(*Continued from page* 26)

power of poverty"—"The University of Adversity," if you please.

These are the man-making agencies when they are met with courage, fortitude, and determination.

There has been much talk about our Constitution. Let us remember that this document was written with human blood and requires in its revision something more than modern ink.

They who would find greater treasures through constitutional changes must throw off their coats and dig deeper than Washington, Jefferson, Madison, Monroe and the great builders of our country.

Let those who thoughtlessly think we have outgrown the Constitution match the storming of Bunker Hill, cross the ice of the Delaware on bare feet, spend a winter at Valley Forge, and battle their way to Yorktown.

From Washington to Lincoln it is a history of heroism out of which has come great principles that have made our country the greatest in the world—principles not born on beds of roses behind college walls.

Back of it all is the attitude of the man. It does not make much difference what's in front of a man; it makes all the difference in the world the kind of man that's behind it. What our country needs today is not the outlook but the inlook. Prosperity must be born within or it will never be seen without.

The man behind the gun decides the issue of the battle.

B. Mifflin Hood Co.

Chemical Stoneware:
ALL TYPES CHEMICAL BRICK AND SHAPES.
SPIRAL RINGS, DIAPHRAGM & RASCHIG RINGS.

Hood Kil-Kraft Tiles

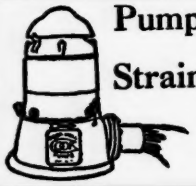
Quarry Tile:
ALL TYPES QUARRY FLOOR & WALL TILE.
ROOF TILE AND FACE BRICK.

Write For Literature

Plants: DAISY, TENN. ADAIRSVILLE, GA. NORWOOD & GULF, N.C.
Offices: ATLANTA, GA. DAISY, TENN. CHARLOTTE, N. C.

SHALE BRICK
Common, Face & PAVERS
QUARRY TILE-Floor Blocks
Special Shapes from Hard Burned Shale
TO ORDER
Alcoa Brick & Tile Works, Alcoa, Tenn.

SAND—GRAVEL—BRICK
FILTER GRAVEL
Washed Sand and Gravel for Concrete Roads and Buildings
Filter Gravel, all sizes—Building Bricks
FRIEND & CO., INC. River St., Petersburg, Va.



Pumps—Deep-Well Plunger and Turbine
Strainers—and other well supplies
WATER PRESSURE SYSTEMS
A. D. COOK, Inc.
Lawrenceburg, Indiana

Water Purification Plants
Any Type—Any Purpose—Any Capacity
Dry Chemical Feed Machines
Swimming Pool Filters
E. W. BACHARACH & CO.
Rialto Bldg. Kansas City, Mo.

GLAMORGAN
PIPE & FOUNDRY CO.
LYNCHBURG, VA.

Filtration and Pumping Equipment
For Water Works and Swimming Pools
Sales and Installation
BURFORD, HALL AND SMITH
140 Edgewood Avenue, N. E.,
Atlanta, Georgia

DESIGNERS AND ENGINEERS

Fabricators of:

Structural steel bridges, buildings, tanks, general plate work, barges, towboats, large cargo vessels, passenger vessels, tankers and refinery equipment.

—o—

THE INGALLS IRON WORKS COMPANY

Birmingham, New York (1 E 42nd St.), Atlanta, Pittsburgh and New Orleans

Address: Birmingham, Alabama

BELMONT IRON WORKS

PHILADELPHIA NEW YORK EDDYSTONE

Southern Sales Offices, Charlotte, N. C.

Engineers . Contractors . Exporters

STRUCTURAL STEEL
BUILDINGS AND BRIDGES
RIVETED-ARC WELDED

BELMONT INTERLOCKING
CHANNEL FLOOR

Write for Catalogue

Main Office—Philadelphia, Pa.
New York Office—44 Whitehall St.

Bristol Steel & Iron Works, Inc.
STRUCTURAL STEEL

For Buildings, Bridges and All Industrial Purposes
BRISTOL, VIRGINIA-TENNESSEE

District Sales Offices:

431 Third Nat'l Bank Bldg., NASHVILLE, TENN.
501 Public Service Bldg., ASHEVILLE, N. C.

STRUCTURAL STEEL *for* BUILDINGS and BRIDGES

Capacity 1000 Tons per Month. 3000 Tons in Stock

Carolina Steel and Iron Company
The Largest Steel Fabricators in the Carolinas
Greensboro North Carolina
S. C. Rep., Edward McCrady, 307 Allen Bldg., Greenville, S. C.

CONVERSE BRIDGE & STEEL CO.

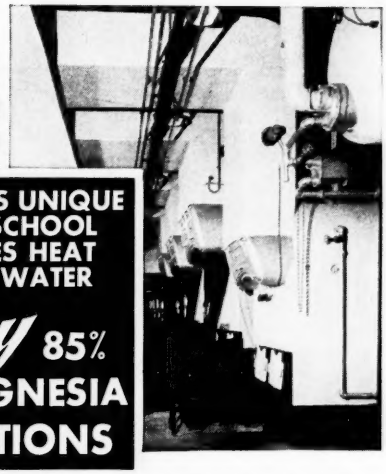
Chattanooga, Tennessee

Structural Steel for all Industrial Structures, Buildings and Bridges.

LARGE STOCK FOR IMMEDIATE SHIPMENT

GALVANIZING

Have it done by Philadelphia's OLDEST, the Country's LARGEST
—HOT DIP JOB GALVANIZER—
Joseph P. Cattie & Bros., Inc.
Gaul & Letterly Sts., Philadelphia, Pa.
GALVANIZED PRODUCTS FURNISHED



BALTIMORE'S UNIQUE 7-STORY SCHOOL CONSERVES HEAT AND HOT WATER *with* Carey 85% MAGNESIA INSULATIONS

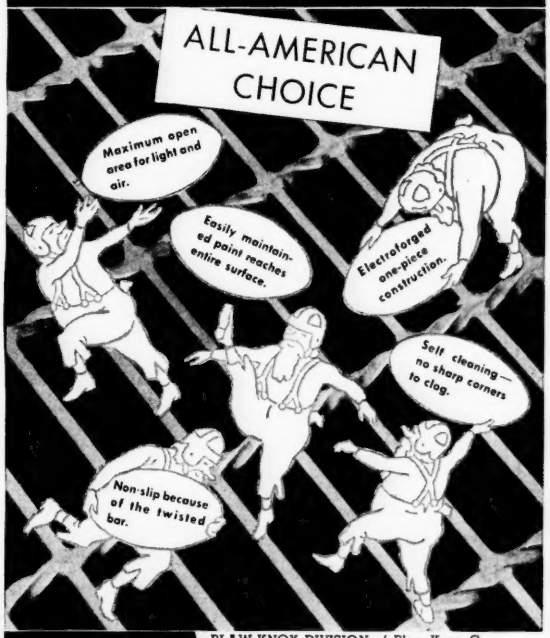
Baltimore's Patterson Park Junior High School is built seven stories high to accommodate 3,000 students on a ground area 355 by 142 feet. Among its unique features are automatic elevators, roof recreation areas and a simplified air conditioning and ventilation system.

Carey 85% Magnesia was used to insulate the four heating boilers, the breechings and the entire plumbing and heating equipment, including steam risers and exposed returns.

A nation-wide service and distribution organization will assist you in solving your insulation problems. Write Dept. 61 for Carey Insulation Catalog.

THE PHILIP CAREY COMPANY • Lockland, Cincinnati, Ohio
Dependable Products Since 1873
BRANCHES IN PRINCIPAL CITIES

Blaw-Knox GRATING


ALL-AMERICAN CHOICE
Maximum open area for light and air.
Easily maintained point reaches entire surface.
Electroforged one-piece construction.
Self cleaning—no sharp corners to clog.
Non-slip because of the twisted bar.

FREE
Paper weight size sample . . . Just fill in and mail the coupon.

BLAW-KNOX DIVISION of Blaw-Knox Co.
Farmers Bank Bldg., Pittsburgh, Pa.
SEND GRATING SAMPLE TO

Name_____
Street_____
City_____ State_____

Industrial Research

(*Continued from page* 35)

miscellaneous machinery, rubber products, leather and its products, and textiles.

Undoubtedly the major function of a laboratory is affected by the times and conditions prevailing, but it is interesting to note that in a survey conducted only a few years ago into the activities of 256 companies operating laboratories in 16 industries, improved quality of product or service ranked highest among their functions with 38.3 per cent and new products was a close second with 36.7 per cent: reduced production costs rated 19.9 per cent, development of new fields of application was 3.9 per cent, and activities looking toward by-products or new materials was lowest with 1.2 per cent.

Industries of particular interest to the South showed that in chemicals 44.6 per cent went into seeking new products, 32.1 per cent was for improved quality of product or service, 14.3 per cent was to reduce production costs, 7.2 per cent for the development of new fields of application, and 1.8 per cent for by-products or new materials. In the paper industry, the laboratory functions were divided very similarly to that of the chemical industry. With paints and varnishes, almost the reverse was true—66.7 per cent of the laboratory functions going for improved quality of product or service and the remaining 33.3 per cent devoted to finding new products. Oil works and petroleum refining and textiles on the other hand were two industries rather alike in the distribution of their activities with 46.0 and 41.7 per cent respectively for improved quality of products or service, 38.6 and 41.7 per cent for reducing production costs, 7.7 and 16.6 per cent for new products and, in the case of petroleum, 7.7 per cent for by-products or new materials. Neither of the two latter industries regarded the development of new fields of application as a major investigation.

Not all the laboratories engaged in industrial research however, are owned and operated by individual industries, companies or trade associations. On the contrary, nearly 300 colleges and universities carry out extensive industrial research and commercial testing besides instructing students. Almost half of these institutions are assisted financially and in other ways by individual companies and trade associations. Quite a number of these college laboratories are in the South while others are being encouraged and instructed to do this kind of work looking to the time when they may take an active part in industrial research on a commercial basis and especially be equipped to handle materials and problems peculiar to southern materials and industries.

Another phase of industrial research is that conducted by foundations and sponsored by numerous companies and organizations. Finally, there are the various research laboratories of the Federal government such as the National Bureau of Standards in Washington, D. C., the Forest Products Laboratory at Madison, Wisc., and the several laboratories of the Department of Agriculture. Altogether, the Federal Government's expenditure for research far exceeded $50,000,000 in 1939, a large percentage of it going for research in purely industrial fields.

U. S. Exports Continue High in January

(*Continued from page* 31)

1940, with $20,000,000 of the increase of $37,000,000 in aircraft and $8,000,000 in metal-working machinery. The value of exports of textile fibers and manufactures increased from approximately $22,000,000 to $73,000,000, or by $51,000,000, of which the increase in raw cotton alone was $44,000,000. The value of metals and manufactures shipped to foreign countries reached $65,000,000 in January from $25,000,000 in January, 1939, a gain of $40,000,000, half of which was accounted for by heavy iron and steel products and a quarter, or $10,000,000 by refined copper.

Preliminary data on exports of domes-

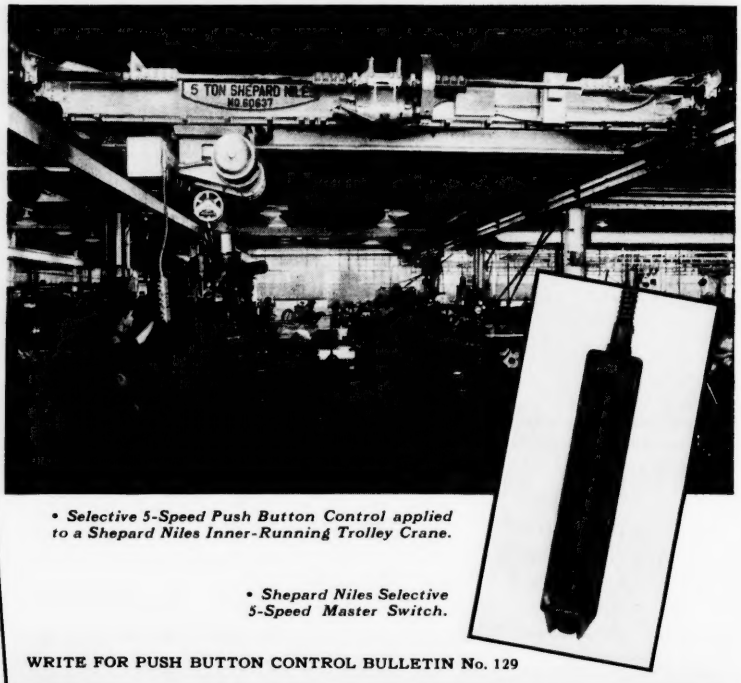
(*Continued on page* 58)

Overhead ELECTRIC TRAVELING CRANES

CAPACITIES 1 TO 450 TONS

● Up under the ceiling there is always a clear right of way for moving loads. Floor space is saved—aisles are never blocked—and materials move faster, move most economically on the crane or hoist precisely suited to the job.

Shepard Niles offers Electric Cranes of practically every type for lifting and moving loads up to 450 tons and Electric Hoists of more than 5000 standard types and sizes.



• *Selective 5-Speed Push Button Control applied to a Shepard Niles Inner-Running Trolley Crane.*

• *Shepard Niles Selective 5-Speed Master Switch.*

WRITE FOR PUSH BUTTON CONTROL BULLETIN No. 129

SHEPARD NILES CRANE & HOIST CORP.

362 SCHUYLER AVENUE . . . MONTOUR FALLS, N. Y.

Structural Assembly Shop, Navy Yard, Philadelphia, Pa.
49,000 sq. ft. White and 19,000 sq. ft. Actinic, Corrugated
Wire Glass—side wall and monitor construction

SPECIFY ORIGINAL SOLID CORRUGATED WIRE GLASS

It *diffuses* light with a minimum of shadows. *It is practically* self-cleaning and can be used on a roof of any material and supply daylight in manufacturing and industrial plants—an important factor in all modern production.

Also used with excellent results on sidewalls, marquises, canopies and wherever daylight is needed.

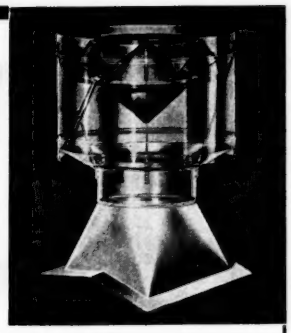
Our Engineering Service Department can aid you on your skylighting problems. Write or wire.

PENNSYLVANIA WIRE GLASS CO.
1612 MARKET STREET
PHILADELPHIA, PENNSYLVANIA

BURT

Free-Flow Gravity

VENTILATORS



Here is the simplest, most effective gravity roof ventilator made, best adapted for all general requirements. The extra wide wind band creates a powerful suction, and interior construction allows free flow of air continuously upward. Having no moving parts, there are no service problems. Burt makes a type and size for every need.

WRITE FOR CATALOG AND DATA SHEETS

THE BURT MFG. CO.
Roof Ventilators • Oil Filters • Exhaust Heads
South High St., Akron, Ohio

LYONORE METAL GIVES YOU UNIFORM QUALITY; it's made in

ONE GRADE ONLY

A distinctive trademark is stamped 3 times in red diagonally lengthwise on each sheet of genuine Lyonore Metal. There is no "second grade" . . . Each sheet is guaranteed to give the same long lasting, corrosion-resisting satisfaction as another! Use this "four element" alloy—chromium, nickel, copper, iron—Lyonore Metal, for all your sheet metal requirements.

Lyon, Conklin & Co. Inc.
WASHINGTON BALTIMORE

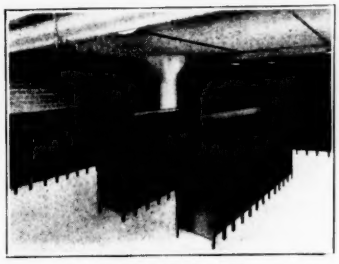
Lyonore Metal

CHROMIUM — NICKEL — COPPER — IRON ALLOY

DURABILT STEEL LOCKERS

are exceptionally suitable

for employees clothing storage in



American Bemberg Corp.
Johnson City, Tenn.

- *Factories, Mills, and Plants*
- *Offices, Stores, and Banks*
- *Clubs, Lodges, and Hotels*
- *Public Buildings and Institutions*

Send for New Industrial Folder

We have just prepared a new folder #5086 which illustrates many nice industrial locker rooms where Durabilt Lockers are installed. Write today for a copy. It will be of considerable value to you.

"No better built than Durabilt!"

DURABILT STEEL LOCKER CO.
436 Arnold Ave. Aurora, Ill.

U. S. Exports Continue High in January

(*Continued from page* 56)

tic merchandise to particular countries and geographic areas in January show striking advances from the low levels of January, 1939. The value of shipments to the United Kingdom rose from $41,600,000 to $66,500,000; to France, from $10,700,000 to $37,900,000; to Canada from $25,400,000 to $38,900,000; to the Netherlands, from $7,800,000 to $13,000,000; to the Union of Soviet Socialist Republics from $2,800,000 to $11,300,000; and to Latin America from $39,100,000 to $65,700,000. Exports to other countries, and areas, although involving smaller dollar amounts, increased substantially in many instances. A considerable decrease in shipments to Belgium was reported for the month as compared with January 1939. Direct trade with Germany and the German-occupied areas ceased altogether.

The January 1940 exports to the United Kingdom, the Netherlands, France and Russia increased as compared with December, 1939, approximately $17,000,000, $3,000,000, $1,500,000 and $875,000, respectively, while those to Latin America were $9,600,000 smaller in January than in the preceding month.

The Permanence of Southern Pulp Mills

(*Continued from page* 33)

forest owners, farmers, lumber companies, turpentine farmers, and others would lose their markets for pulpwood and the opportunity to grow pine trees on land not in cultivation and not needed for agriculture. One typical large mill in the Southeast during an average month in 1938 purchased $131,883 worth of pine pulpwood which amounts to about $1,500,000 for an entire year. This is money brought into the timber producing territory by the mill from other sections of the country and disbursed locally to those selling, handling, and delivering wood to the mill. These figures show how important the business of selling pulpwood really is and give some indication of what an economic stimulus the purchase of pulpwood is to the region tributary to it.

Pulp Mills Cooperate With Public

Realizing that public support for forest industries is essential, the pulp mills individually and collectively are taking active steps to encourage cooperation between the various units of the industry, between the lumber and naval stores industries and the pulp industry, and between the industry and governmental agencies. These aims are being accomplished by means of public relations activities by the woodlands departments designed to encourage other owners of forest land, independent owners and other industry owners, to consider the merits of pine pulpwood as a permanent crop in itself or incidental to growing other forest crops. To aid and further this program the Southern pulp and paper industry assisted in organizing the Southern Pulpwood Conservation Association headed by a trained forester and composed of pulp mills, pulpwood producers, handlers, growers, and others interested in the problems of pulpwood permanence. This Association has adopted self-imposed regulations or restrictions as to pulpwood cutting and each forest region in the South has a definite set of pulpwood cutting rules agreed to by the consuming or purchasing mills. These regulations require that even pulpwood cut from another's land be produced in such a manner that the land, unless it is to be cleared for agricultural purposes, will be left productive. Inaugurated in 1937, this program has been extremely successful and now it is uncommon to see pulpwood cutting areas that do not have seed trees or sufficient small trees or both to provide for future timber crops from the harvested areas, provided they are not burned.

Association leadership also cooperates closely with public agencies in formulat-

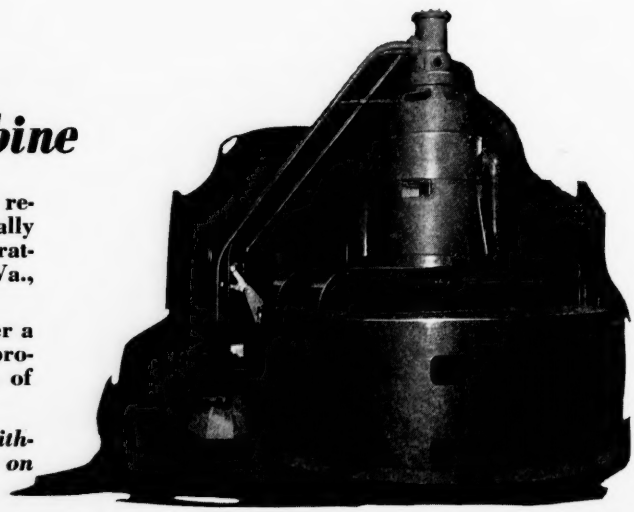
(*Continued on page* 60)

Another Important *Plant Benefits by using A Smith-Kaplan Turbine*

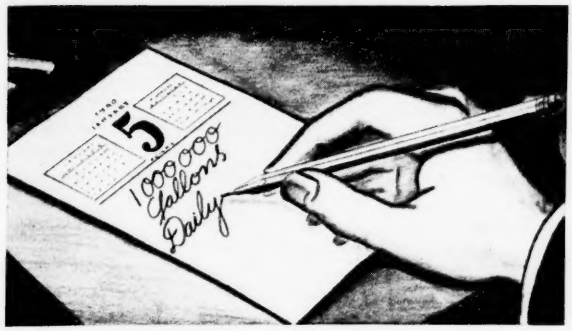
THE Northern Virginia Power Company recently installed a Smith-Kaplan Automatically Adjustable Blade 1000 KW Turbine, operating under 24 ft. head, in its Millville, W. Va., plant.

This unit operates at high efficiency over a wide range of load and discharge, thus producing maximum power per cubic foot of water used.

Send for Bulletin 139. ***Know why Smith-Kaplan units give you the highest returns on investments in water power equipment.***



S. MORGAN SMITH COMPANY YORK, PA.



JUST WRITE THE QUANTITY

Layne Well Water Systems Will Fulfill Your Needs

For over half a century, the Layne Organization has been designing, building and installing municipal and industrial well water systems. Today about seven of every ten installations bear the name of Layne. Such a record denotes the highest in engineering skill and an uncompromising standard of quality.

AFFILIATED COMPANIES

LAYNE-ARKANSAS CO. STUTTGART, ARK.
LAYNE-ATLANTIC CO. . . . NORFOLK, VA.
LAYNE-CENTRAL CO. . . . MEMPHIS, TENN.
LAYNE-NORTHERN CO., MISHAWAKA, IND.
LAYNE-LOUISIANA CO. LAKE CHARLES, LA.
LAYNE-NEW YORK CO. . NEW YORK CITY AND PITTSBURGH . . . . . PA.
LAYNE-NORTHWEST CO. MILWAUKEE, WIS.
LAYNE-OHIO CO. . . . COLUMBUS, OHIO
LAYNE-TEXAS CO. . . . HOUSTON AND DALLAS . . . . . TEXAS.
LAYNE-WESTERN CO., KANSAS CITY, MO. CHICAGO, ILL. . . . OMAHA, NEBRASKA
LAYNE-WESTERN CO. OF MINNESOTA MINNEAPOLIS . . . . . MINN.
LAYNE-BOWLER NEW ENGLAND COMPANY. BOSTON . . . . . MASSACHUSETTS.
INTERNATIONAL WATER SUPPLY, LTD., LONDON . . . . . ONTARIO, CANADA

Whatever your water needs may be, provided geological formation does not prohibit, Layne will adequately fulfill your needs in a contract that pre-specifies the cost per million gallons. Furthermore based upon past records, a Layne Water System assures you of the most years of service at the lowest upkeep cost.

Any City, Factory, Paper Mill, Oil Industry, Railroad, Irrigation, or other business official, may secure a complete file of bulletins, catalogs and folders on Layne Well Water Systems, without obligation, by addressing,

LAYNE & BOWLER, INC.
Dept. X-1, Memphis, Tenn.

LAYNE

PUMPS & WELL WATER SYSTEMS

For Municipalities, Industries, Railroads, Mines and Irrigation

A GUSHER of SALES and Satisfaction with MYERS DOUBLE ACTING CYLINDERS

Today Myers brings you the most modern, the most dependable double acting cylinders on the market. There is nothing experimental about them. Designed by experts, built to precision standards, their reputation for dependable and economical service is firmly established in pump circles the country over.

Whether conditions are regular or otherwise, Myers Double Acting Cylinders satisfactorily solve most deep well pumping problems. They furnish the plus volume of water that lowers pumping costs and satisfies the most critical of users.

If you require more water from any source at lower cost than is possible to secure by ordinary methods write us for circular and complete information.

THE F.E. MYERS & BRO. CO.
ASHLAND, OHIO
PUMPS-WATER SYSTEMS-HAY TOOLS-DOOR HANGERS

The Permanence of Southern Pulp Mills

(*Continued from page* 58)

ing conservation legislation and in obtaining adequate appropriations for the protection of forests and for the guidance of other land owners in better cutting practices. Unfortunately, woods fires still are the greatest scourge of Southern forests even with wide recognition of the basic importance of timber as an industrial resource. The pulp industry must wage constant warfare with this public enemy, fire, that if not held in check would take heavy timber toll each year and make cutting rules ineffective. Some idea of the great losses of timber due to mortality of standing live trees can be gained by an examination of the South-wide timber inventory taken by the Forest Survey. The southeastern naval stores region including north Florida, south Georgia, and southern South Carolina, is one of the most productive forest areas of the world and one of the most heavily utilized, since the forests yield saw logs, pulpwood, poles, veneer bolts, ties, and naval stores.

Toll of Fire in Southern Forests Approaches Amount Used

In southeastern longleaf and slash pine forests, which aggregate 35,000,000 acres in Florida, south Georgia, and southeastern South Carolina, the total growth of pine timber for 1934 was 658,000,000 cubic feet of wood while the total amount cut and used for industrial and domestic purposes, including firewood, was less than half that amount, or 313,000,000 cubic feet. Mortality during the same year caused the tremendous loss of 406,000,000 cubic feet of merchantable wood or nearly one-third more than the amount used for industry and community support.

In terms of board feet the situation was similar: 2,172,000,000 feet of pine timber were grown, 1,277,000,000 feet were used, and 1,144,000,000 feet were lost through mortality. No estimate is possible of the vast amount of potential timber killed by fire in the form of seedlings and saplings that would otherwise have matured into merchantable timber crops on the burned over areas.

Waste of timber, not use of timber, is the real threat to permanently productive forests in the Southeast. Fire prevention would soon eliminate most of the timber losses, and provide perpetually for many more wood using mills of all kinds than there are at present.

One effective method of bringing to the attention of farmers and other forest owners the advantages of selective cutting, thinning, fire protection and other forestry measures is by means of demonstration plots. Many pulp companies have established roadside demonstration areas showing the way forests can be cut for integrated utilization and permanent production of all timber products. Large signs give information concerning the amount of timber on the plots before and after cutting and the number of cords removed. As time passes, the actual amount of growth obtained by measurement is shown and all forest owners soon realize that poor timber cutting is poor business.

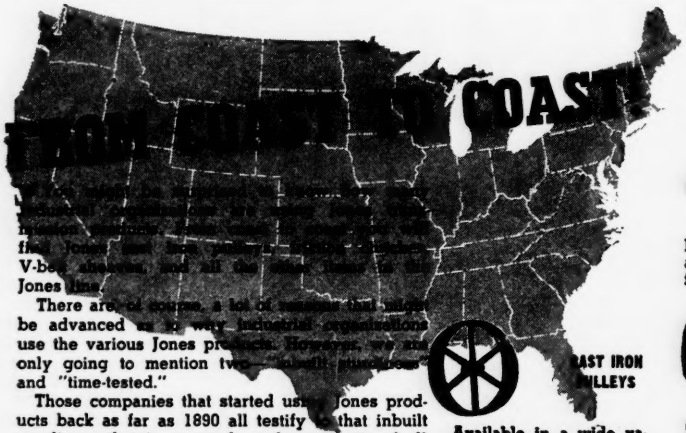
Increasing interest in fire protection as shown by rapid diminution of areas burned in southern states each year and the rapidly spreading policy of partial cutting and integrated use is rapidly solving the problems raised by the first migration of pulp mills to the South. A second migration will come and by then southern forests will be ready for the still greater use they are so capable of supporting continuously.

South's Contracts Up As Industrial Work Gains

(*Continued from page* 37)

of Shreveport, La. Roeser and Pendleton, Inc., of Palestine, Tex., is erecting a $130,000 recycling plant in Northwest Anderson County, Tex. It will have a daily capacity of 10,000,000 cu. ft.

Vernon Meat Co., of Vernon, Texas, let the contract for a $150,000 meat packing plant. This project stood out among a number of others in the food beverage and clothing businesses of the South.



V-be... Jones line.

There are, of course, a lot of reasons that could be advanced as to why industrial organizations use the various Jones products. However, we are only going to mention two—dependability and "time-tested."

Those companies that started using Jones products back as far as 1890 all testify to that inbuilt sturdiness that is so much a characteristic of all Jones design . . . and the fact that these companies keep right on sending in repeat orders is the best testimonial for the "time-tested" claim.

When you are in the market for hangers and bearings, anti-friction pillow blocks, couplings, friction clutches and V-belt sheaves, send your inquiry along to Jones. We believe you will find these Jones products measure right up to the time honored "satisfaction guaranteed" statement which, though a little threadbare from usage, still expresses the thought of old time craftsmanship.

W. A. JONES FOUNDRY & MACHINE CO.

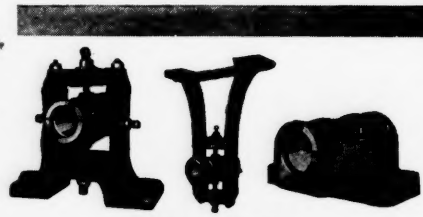
4423 Roosevelt Rd., Chicago, Ill.

CAST IRON PULLEYS

Available in a variety of types including multiple piece pulleys, rubber covered pulleys, and flywheels.

FRICTION CLUTCHES

Complete range of sizes of either the open or enclosed types.



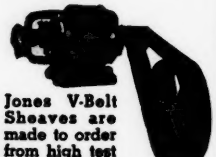
HANGERS AND BEARINGS

Duplex ring oiling Universal drop hangers, pillow blocks and bracket hangers. Babbitted journal boxes, common flat boxes, step boxes, and takeups.

COUPLINGS—High and low speed flexible couplings, flange, keyless compression, ribbed and jaw clutch couplings.

JONES TIMKEN PILLOW BLOCKS

Roller bearing pillow blocks and bearing units in spherical, cylindrical and hanger types.



V-BELT SHEAVES

Jones V-Belt Sheaves are made to order from high test cast iron. Furnished in all styles for all sizes of belts.

Jones

HERRINGBONE—WORM—SPUR—GEAR SPEED REDUCERS • PULLEYS
CUT AND MOLDED TOOTH GEARS • V-BELT SHEAVES • ANTI-FRICTION
PILLOW BLOCKS • FRICTION CLUTCHES • TRANSMISSION APPLIANCES

ESTABLISHED 1905

Strand
FLEXIBLE SHAFTS

THIRTY-FIFTH YEAR

REGISTERED TRADEMARK

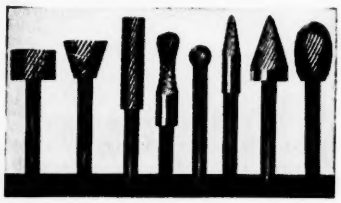
FLEXIBLE SHAFTS AND MACHINES

— EXCLUSIVE MANUFACTURERS —
IN ALL PARTS OF UNITED STATES
SOUTH—EAST—NORTH—WEST
— STRAND —
HIGH QUALITY MACHINES ARE SERVING INDUSTRY

Type MY 4

SIXTY TYPES AND SIZES
1/8 to 3 H.P.
Confer With Your Dealer or Write Us Direct for Catalog

GROUND ROTARY CUTTERS



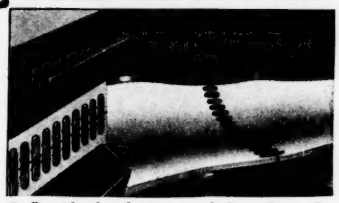
N. A. STRAND & COMPANY
MAIN OFFICE AND FACTORY
5001 - 5009 No. WOLCOTT AVE., CHICAGO

Keep your conveyor belts going with

FLEXCO

HD BELT FASTENERS

• FLEXCO H D RIP PLATES are used in repairing rips and patching conveyor belts. The wide space between outer bolts gives the fastener a long grip on the edges of the rip, while the center bolt prevents the fasteners from bulging.



• Avoid shutdowns and lengthen the life of your conveyor belts and bucket elevator belts by using Flexco HD belt fasteners and rip plates. Thousands of companies have stepped up the performance of conveyor lines and cut costs by using Flexco methods.

• FLEXCO H D BELT FASTENERS make a strong, tight butt joint with long life. Recessed plates embed in belt, compress belt ends and prevent ply separation. Five sizes in steel and alloys.

Bulletin F-100 shows exactly how to make tight butt joints in conveyor belts with Flexco HD Belt Fasteners. Also illustrates step by step the latest practice in repairing rips and putting in patches.

Write for your copy

FLEXIBLE STEEL LACING COMPANY
4690 Lexington St., Chicago

FLEXCO HD BELT FASTENERS
Sold by supply houses everywhere

"AUTOMATIC" USERS ARE SAVING THOUSANDS OF DOLLARS WITH IMPROVED MATERIALS HANDLING · ·

WITH MODERN *Electric Propelled* MATERIAL HANDLING EQUIPMENT

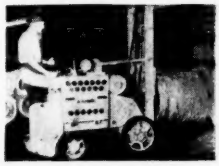
Many industries have re-organized their materials handling from haphazard uncontrolled methods to scientific, profitable methods with "AUTOMATIC" Industrial Trucks, Tractors, and Cranes.

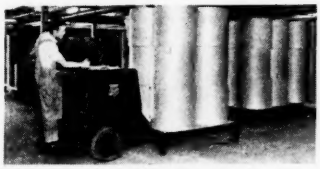
★

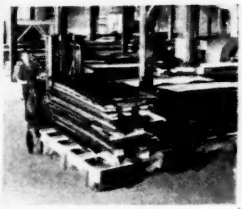
You as a plant executive must constantly recognize the vital importance of carefully selected, properly co-ordinated mechanical handling equipment, especially designed to lower intra-plant transportation costs — to save time — eliminate needless handling —increase machine-hour and man-hour productivity — simplify inventory process — reduce over-all floor space in proportion to production.

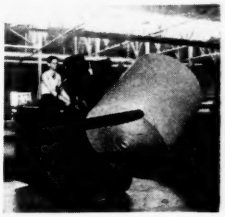
To meet the demand for modern material handling equipment "AUTOMATIC" offers you a complete new series of "Electric Propelled" trucks, tractors, and cranes, some of which are illustrated here.

Perhaps you have a material handling problem now. If so, write for complete information and details.









★

AUTOMATIC TRANSPORTATION COMPANY
Div. of the Y. & T. Mfg. Co.
117 W. 87th Street — Chicago, Illinois

"Ship **ON PALLETS***" . . Save* **TIME** *. . Aid* **LABOR** . . .
CUT COSTS WITH *New* **"AUTOMATICS"**

Quieting the Nerves in the Sinews of Industry

(*Continued from page* 52)

from rope.

But that is only the beginning of the story of what preforming has done for wire rope. Just as a porcupine sticks out its quills when frightened, a "nervous" non-preformed rope presents a bunch of broken wire ends sticking out from the rope after fatigue and wear have set in. At every wire break, the ends straighten out, causing chisel sharp barbs which frequently lacerate the workman's hands if the rope is handled, or that are bent and clinched against neighboring wires by the action of the sheaves, which further hastens the destruction of the rope.

Preformed rope even when worn is smooth because broken wire ends do not try to straighten out but continue to lie in the helix in which they were originally formed. Hence, broken wires do no further damage to the rope, nor to workmen or sheaves. The preformed rope is safe for both men and equipment.

There are many ways in which industry uses old rope. Instead of discarding damaged rope, but using it in applications where it presents no hazard, large sums of money are saved every year by industry. Despite the best of care and watchfulness, sometimes a strand breaks while the rope is in service. In a non-preformed rope, a broken strand is apt to fly out and unwind for several feet. If the equipment is not stopped immediately, the broken strand is apt to catch in a sheave or drum and may damage a considerable length of the rope as well as require the replacement of a sheave or bearing on the equipment. Should the rope part completely, the ends will probably ravel for a distance of 20 feet or more. This footage of course has to be discarded if the rope is to be re-used.

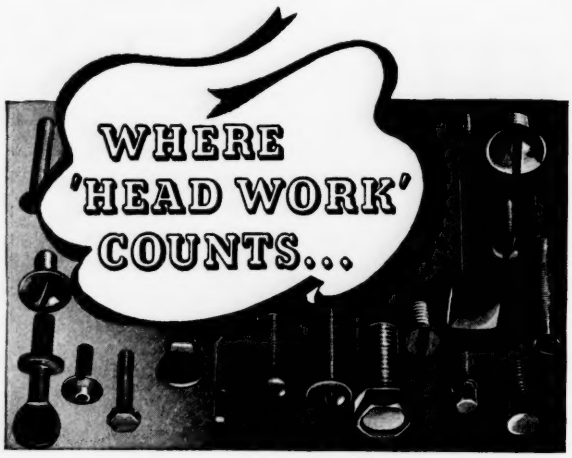
Preformed rope does not behave in this manner. A broken strand is inclined to keep its position in the rope and not unravel and cause damage to both rope and equipment. If the rope breaks, only the broken ends need to be cropped off, the rest of the rope remaining in good condition for salvage.

In addition to increasing service and promoting safety, preforming also reduces the constructional stretch in rope. This characteristic is taken advantage of in endless ropes used for power transmissions. These power transmission systems often have a limited take-up to compensate for slack in the rope. In non-preformed rope, the total stretch may in time amount to as much as 20 feet in a 300-foot endless-spliced rope. Such excessive stretch may require an occasional cutting and resplicing. The splicing operation takes considerable time, during which the equipment may have to lie idle. The ultimate stretch of preformed rope is only about one-third that of non-preformed rope.

Preforming also has had a favorable effect on rope installation, particularly socketing. Because the strands and wires lie in their proper positions without tendency to fly out and ravel, the rope lay is not apt to be disturbed while attaching the rope to the socket. Maintaining the correct lay is very important, because even a slight deviation produces unbalanced stresses in the rope at the point where it enters the socket, and accelerates metallic fatigue at this point.

Thus, by taking the "nervousness" out of wire rope, performing has added to the life of the rope, eliminated its unruliness, increased its safety, reduced its stretch, and made good socketing easier to obtain.

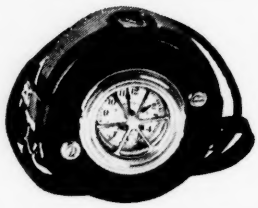
Standing ropes used as guys and spars, or ropes that are only infrequently operated such as boom lines on power shovels, are not vitally affected by "nerves" and hence the advantages of preforming do not apply. These applications are generally served very well by non-preformed rope.



Alert buyers intent on procuring better fastening devices at a saving are discovering that PROGRESSIVE screws and headed parts — formed accurately and economically by the cold upset process—are a considerable factor in keeping production costs down and profits up. You will find it worth while to submit your problems to PROGRESSIVE experts who specialize in made to order items requiring special heads, threads or finishes. Address your inquiry to:

The PROGRESSIVE MFG. CO.
TORRINGTON · · · CONNECTICUT

DETEX
WATCHMEN'S CLOCKS



DETEX WATCHCLOCK CORPORATION
404 Glenn Building, Atlanta, Ga.
NEW YORK • CHICAGO • BOSTON • ATLANTA

SCREWS for every need

You can depend on us for
QUALITY·EFFICIENCY·SERVICE

SAMUEL J. SHIMER & SONS
MILTON, PENNSYLVANIA

Colson Casters PAY YOU WELL

From the smallest to the largest, Colson casters are built to *quality* standards. Because casters are not costly—it pays you to buy the best. You'll find Colson casters will serve you long—roll easily—and pay you well wherever a caster is needed. Make your selection from the Colson Caster Buying Guide...mailed on request.

Send for this complete Colson caster catalog. It will simplify your selection of casters for any equipment.

THE COLSON CORPORATION
ELYRIA, OHIO
Offices and Agencies in Principal Cities
CASTERS • INDUSTRIAL TRUCKS AND PLATFORMS • LIFT JACK SYSTEMS

PERFORATED METAL

of every sort

for Screening, Grading, Ventilating or any industrial purpose. Also Grilles of many beautiful designs.

5631 Fillmore St., Chicago, Ill. New York Office: 114 Liberty St.

The Harrington & King PERFORATING CO.

ERDLE PERFORATED SHEET METALS

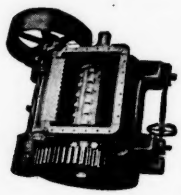
SIXTY YEARS' experience in Metal Perforating is your assurance of a satisfactory job.

Made to your specifications and shipped promptly.

Metal Sample Plate on Request.

ERDLE PERFORATING COMPANY,
171 York Street, Rochester, N. Y.

McLANAHAN EQUIPMENT

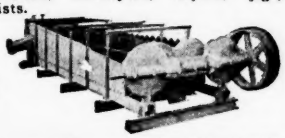


CRUSHERS

Single and double roll and jaw crushers, hammer mills, super dry pans—steel log washers and scrubbers, sand drags, revolving and vibrating screens, elevators, conveyors, dryers, jigs, hoists.

SCREENS

Complete portable, semi-portable and stationary crushing, screening and washing plants for different capacities of any materials.



McLanahan & Stone Corp. *Established 1835* HOLLIDAYSBURG, PENNSYLVANIA

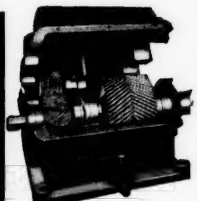
PERFORATED METALS

For every purpose, Industrial and Ornamental

Steel, Stainless Steel, Monel Metal, Brass, Copper, Bronze, Aluminum, Zinc, Lead, Tin Plate and all other metals or materials perforated as required, and for all kinds of screens. Send for new Catalog.

CHARLES MUNDT & SONS
486 Johnston Ave., JERSEY CITY, N. J.

LINK-BELT Speed Reducers



Herringbone Gear Speed Reducer

● The three improved types of reducer units included in the Link-Belt line—Herringbone Gear, Worm Gear, and Motorized Helical Gear—meet today's needs for the dependable transmission of power at accurate speeds. Send for catalogs. Address the nearest office.

LINK-BELT COMPANY, ATLANTA, PHILADELPHIA, DALLAS, BALTIMORE, NEW ORLEANS
7607-A

HENDRICK
PERFORATED METALS

Screens and grilles
in all commercially rolled metals,
all standard and special designs.
Write for literature

HENDRICK MANUFACTURING CO.
44 Dundaff Street, Carbondale, Pa.

Manufacturers of Mitco Open Steel Flooring, Mitco Shur-Site Treads and Mitco Armorgrids.

Student Aviation Scholarships

Establishment of a $15,000 scholarship and award fund, for which more than 9,000 student aviators in 400 American colleges will be eligible to compete, has been announced by the Institute of the Aeronautical Sciences.

The fund, established by Shell Oil Company to provide the Shell Intercollegiate Aviation Scholarships for students pilots, and the Shell Aviation Awards for colleges and flight schools participating in the Civil Aeronautics Authority's civilian pilot training program, will be administered by the Institute.

Plans for administration of the fund call for the selection of the nation's three outstanding student pilots by means of an audit of their grades and by a nation-wide flight competition next June. Seven regional elimination contests are to be held after which seven winners will compete for the three scholarship awards at Washington, D. C.

The winner of the national competition will receive a scholarship of $1,000 to be used for advancement of his education along aeronautical lines. Students placing second and third will receive $750 and $500 scholarships, respectively.

Awards will be made on the basis of the student's record in the government flight and ground courses and his ability to execute specified flight maneuvers with maximum precision and safety. Provision is made for expenses of finalists and semi-finalists.

The university or college which is judged to have made the best record in training student pilots as a participant in the C.A.A. program will receive the Shell Intercollegiate Aviation Trophy. A similar award will be made to the flight school achieving the outstanding flight training record in the United States.

New North Carolina Industries

Total NEW industries established in North Carolina during the year 1939, numbered 90.* New additions to existing plants numbered 129. Hosiery mills for the second straight year led in gains: 23 new mills, and additions to 38 existing plants.

Compared with 1938, the above figures show a decrease of 34 new plants in 1939, but an increase of 51 plant additions. Due to uncertain world conditions the location of new plants was somewhat less than in 1938, while established businesses, especially in textiles, showed considerable activity and resulted in plant expansions for 95 textile mills (including hosiery) in 1939.

Contracts for industrial construction (does not include operating capital; cost of machinery and equipment) awarded in 1939, totaled more than $16,000,000 in North Carolina. This sum is only slightly less than for 1938, when the total industrial construction was estimated at some $18,000,000.

The total number of employees added by industry in 1938 and 1939, was approximately the same, 15,000 employees for each year. Again, the expansion of the textile industry was responsible for the greatest employment increases.

The average weekly wage, due to improved business conditions, especially during the latter part of the year, as well as the Wage-Hour Act in certain industries, showed an increase in 1939, the average weekly wage being $16.21 as against $14.94 in 1938.

*Figures include only those establishments manufacturing products valued at $5,000 and over, and regularly reported to U. S. Census of Manufactures.

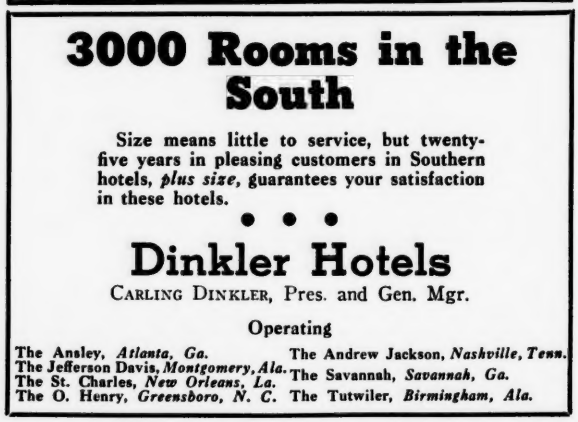
WATER WELL SUPPLIES—
Catalog No. 4—illustrated in colors, devoted to Clayton Mark water well supplies, including forged one-piece drive well points, well strainers and screens, single and double acting cylinders, cylinder valves, cup and flat leathers, check valves and foot valves, drive shoes, drive caps, pump rod couplings, well caps, steel and wood pump rods, etc.; publication revised to May, 1939.
Clayton Mark & Company, Evanston, Ill.

FINE GEARS of all Materials—All Types and Sizes
Spur Gears—½ in. to 30 ft. in diameter
Bevel Gears—½ in. to 13 ft. in diameter
Spiral Gears—½ in. to 10 ft. in diameter
Worm gears any practical size. Racks curved or straight. Fast Delivery—Fair Prices.
THE EARLE GEAR & MACHINE CO.
4719 Stenton Ave., Philadelphia, Pa.
149 Broadway, New York City
EARLE GEARS

CLAY WORKING MACHINERY
FOR BRICK, TILE AND BLOCK,
FROM SMALLEST TO LARGEST CAPACITY.
Write for information
J. C. STEELE & SONS, STATESVILLE, N. C.

Ornamental and Industrial
PERFORATED METALS
We carry a large stock for immediate shipment.
Send for Our Catalogue.
Manhattan Perforated Metal Co., Inc., 43-17 37th St., L. I. City, N. Y.

While cosmopolitan in its general appeal, and modern up to this moment in its equipment, there is a peculiar flavor of The Old South here which Southerners are quick to note and appreciate. They feel at home and come back to us again and again.
Rates $3.00 per day and up. Every room with bath or shower.
Centrally located.
The Southern Hotel
BALTIMORE


3000 Rooms in the South
Size means little to service, but twenty-five years in pleasing customers in Southern hotels, plus size, guarantees your satisfaction in these hotels.
• • •
Dinkler Hotels
CARLING DINKLER, Pres. and Gen. Mgr.
Operating
The Ansley, Atlanta, Ga.
The Andrew Jackson, Nashville, Tenn.
The Jefferson Davis, Montgomery, Ala.
The Savannah, Savannah, Ga.
The St. Charles, New Orleans, La.
The O. Henry, Greensboro, N. C.
The Tutwiler, Birmingham, Ala.